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ABSTRACT

This report evaluates 12 high schools in the New American High Schools (NAHS) program. Launched in 1996, NAHS is a U.S. Department of Education research project that was developed to showcase school-reform practices in selected schools. The report is based on a study that used NAHS schools as a "laboratory" for researching reform practices. It documents their experiences in designing, implementing, and sustaining reform. Using in-depth case studies, the study drew on stories and examples from several of the schools to illustrate each of 10 reform initiatives. It focuses on strategies for raising academic standards and expectations and how to create small learning environments that enable students and teachers to work together. It shows how to structure learning around careers and students' interests and how to promote student achievement by enhancing educators' professional development. Tips on linking classroom and workplace learning and advice on providing counseling to encourage in-depth college and career awareness are also presented. Other practices include: organizing the school day into flexible, relevant segments; assessing students' performance; forging partnerships with two- and four-year postsecondary schools; and creating active student support alliances involving educators, employers, parents, and communities. Two appendices share strategies and other information. (Contains 76 references.) (RJM)

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Strategies to Promote High Standards in High Schools

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NEW AMERICAN HIGH SCHOOLS

U.S. DEPARTMENT OF EDUCATION

HIGH SCHOOLS AT THE LEADING EDGE OF REFORM

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AIMING HIGH:

Strategies to Promote High Standards in High Schools

Interim Report

by
Mary G. Visher
and
Paula M. Hudis

MPR Associates, Inc.
Berkeley, California

October 1999

Supported by the Office of Vocational and Adult Education, U.S. Department of Education

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October 1999

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Introduction

The need to transform high schools in the United States into safe places where all students can reach their full academic and human potential, while also acquiring the skills and knowledge to succeed in college and careers, has never been more urgent. In his 1999 "State of American Education" speech, Secretary of Education Richard Riley said: "High schools of the 21st century must simply become more rigorous."

To help realize these goals in schools nationwide, the U.S. Department of Education in 1996 launched a research project under the New American High Schools initiative that would showcase the school reform practices of a few carefully selected schools. The first 10[1] New American High Schools are the focus of this study and the subject of this report.[2]

These New American High Schools are diverse in their locations, demographic characteristics, size, and many other external factors. However, they have similar goals and share many practices. These practices, which have become known as the New American High Schools reform strategies,[3] form the point of departure for this research, which is aimed at helping all U.S. high schools achieve high performance goals.[4]

Through whole-school activities—involving students, teachers, counselors, administrators, parents, and other community stakeholders—these schools are changing the education experiences of high school students. In particular, they are working together to. . .

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[1]One of the ten sites is a district with three high schools, rather than one school.

[2]The study was launched in 1996 by the National Center for Research in Vocational Education (NCRVE) with the selection of the first 10 sites. In 1997, MPR Associates, Inc. assumed responsibility for collecting and analyzing information about the schools.

[3]After this study began, the Department of Education expanded and revised the list of New American High Schools strategies. The 12 new strategies that resulted from this effort are listed in Appendix A.

[4]For a list of the schools, see Appendix B. In 1999, seven additional schools received recognition. Although these schools are not covered in this report, they are being studied in current research activities and will be included in future publications.

- ★ Raise academic standards and expectations.
- ★ Create small learning environments enabling students and teachers to work together.
- ★ Structure learning around careers and students' interests.
- ★ Promote student achievement by enhancing educators' professional development.
- ★ Link classroom and workplace learning.
- ★ Provide counseling to encourage in-depth college and career awareness.
- ★ Organize the school day into flexible, relevant segments.
- ★ Assess students' progress by what they are capable of doing.
- ★ Forge partnerships with two- and four-year postsecondary institutions.
- ★ Forge active student support alliances involving educators, employers, parents, and communities.

This is the second report completed by MPR Associates for the U.S. Department of Education that addresses the reform strategies being used in the New American High Schools. The first, entitled *Key High School Reform Strategies: An Overview of Research Findings* (Visher, Emanuel, & Teitelbaum, 1999), provides a review of current research on the effectiveness of these 10 reform strategies in improving student and school outcomes. The current report, *Aiming High*, builds on the research from the first publication by showing these practices at work in the classroom.

The first report identified research and evaluation studies that illustrate how some of the New American High Schools strategies have contributed to improving student outcomes and behavior such as attendance, graduation, performance on national standardized tests, and postsecondary enrollments. However, existing research has little to say about the influence of some other strategies. For example, a substantial body of research points to the ways in which career academies positively affect student outcomes, while the effects of using alternative assessment techniques on student learning and performance are less clear.

To understand what works best in high school reform, this study uses the 10 New American High Schools sites as a "laboratory" for researching these practices.

This report presents the results of the first phase of this research by documenting the experiences of these high schools in designing, implementing, and sustaining reform. The study team gathered the material for this report over a one-year period, and much of the report is based on information collected during site visits in the spring of 1998 when the team interviewed school administrators, faculty, students, parents, and community representatives.

★

Through whole-school activities—involving students, teachers, counselors, administrators, parents, and other community stakeholders—these schools are changing the education experiences of high school students.

This report relies primarily on qualitative data to describe school practices—in other words, what schools are doing on a day-to-day basis to make educational reforms. In a later report, once quantitative data on student outcomes become available, the focus will shift to student outcomes as well.

Even when a range of performance indicators becomes available, however, it will be difficult to link specific outcomes with individual practices. For example, it will be nearly impossible to attribute gains in achievement test scores or a rise in attendance rates to particular strategies. What makes the schools studied in this report so unusual, and so highly regarded, is that they have gathered many reform practices under one roof, using a multifaceted approach to reform with the goal of enhancing the effects of each reform.

Educators at these schools have recognized that several of the strategies—such as creating smaller learning environments or using nontraditional class scheduling—largely serve as vehicles for putting in place other, more direct strategies, which include raising academic standards and expectations and changing curriculum and instruction by linking classroom and workplace learning. While combining strategies is clearly the right path to take, it does not make it easy for researchers who seek to identify the connection between reform efforts and student outcomes.

Relying on in-depth case studies, this report uses stories and examples from two or three of the New American High Schools to illustrate each of the 10 strategies. Unfortunately, we had to limit our discussion to the schools that seemed to have the broadest implementation or a particularly well-developed approach. To varying degrees and in different ways, however, *all* of the New American High Schools practice *all* of the strategies discussed in this report.

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Raise Academic Standards and Expectations

Introduction

One of the most important reform strategies practiced by all of the New American High Schools is built on a straightforward premise: when teachers expect more from students, their students will deliver more. These schools are raising expectations for student performance through several different approaches that are part of school reform models being used throughout the country.[5] Every one of them fosters cultures that communicate that *all* students will be held to high performance standards and that teachers and school administrators are changing the classroom experience to achieve these higher academic goals. Educators are demanding that students do more academic work and perform at higher levels.

There is a sound basis for these practices. One of the largest bodies of positive findings on school reform comes from research connecting academic standards and student achievement. For example, substantial evidence suggests that students who complete more mathematics courses score higher on standardized mathematics tests than do other students (Jones, Davenport, Bryson, Bekhuis, & Zwick, 1986; Rock & Pollack, 1995; Hoffer, Rasinski, & Moore, 1995). In addition, a few studies indicate that students who enter college with more rigorous academic preparation receive higher freshman-year grades, earn more credit hours, and stay in college longer (Maryland State Higher Education Commission, 1996; Hamilton, 1992). Promising findings like these have led many states to increase the number of academic credits required for high school graduation (Blank & Gruebel, 1993).

[5]Nationwide, research shows that strategies for raising expectations are taking many different forms. They range from creating positive, supportive learning environments for all students (Wang, Haertel, & Walberg, 1998) to establishing challenging performance standards, eliminating tracking, emphasizing problem-solving and critical-thinking skills, and establishing flexible behavioral standards (Quellmalz & Knapp, 1995).

Despite the positive research, educators do not agree on raising academic standards as a universal school improvement strategy. The New American High Schools stand apart from many other school reform efforts that do not explicitly link rigorous academic requirements to other changes in the curriculum. For example, in a recent study of 26 whole-school reform models, analyses by the Northwest Regional Education Laboratory show that only 6 of 21 models that aimed at improving high school performance explicitly include raising academic standards and expectations (Northwest Regional Education Laboratory, 1998).

This lack of connection between raising academic standards and making other changes in education is also shown by findings from the recent national evaluation of school-to-work programs conducted by Mathematica Policy Research. Many schools had yet to connect new curriculum approaches, such as work-based learning, with efforts to achieve higher academic standards. Specifically, in this study of school-to-work partnerships across the country, a substantial proportion—about one-third of school districts in nearly 1,000 surveyed partnerships in 34 states—had raised overall academic requirements for graduation between 1994 and 1997 (Hershey, Silverberg, Haimson, & Hudis, 1999).[9] However, only limited numbers of these high schools had connected school-to-work programs, such as work-based learning experiences, with higher standards.

Several factors may account for the slow introduction of higher academic standards into broader efforts to overhaul the U.S. education system. As simple as the concept seems, putting higher standards in place is actually quite complex. Even among proponents of the "demand more, get more" approach, there are many questions about the best way to raise the academic bar in high schools. Should students complete additional academic credits in order to graduate; should they complete a particular higher level course sequence; or should they do both? Should the content of existing courses be strengthened, and, if so, which courses? Can schools reasonably expect more from students without investing in special services for those who are already struggling or those who begin their high school career without adequate preparation? Although the

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[9]This continued a trend that predates current school reform efforts in which schools attempted to refocus the high school curriculum by demanding greater emphasis on academic coursework. For example, during the early and mid-1980s, 45 states and the District of Columbia raised graduation requirements, while 42 increased mathematics and 34 increased science requirements (Angus & Mirel, 1995, p. 300; Tozer, Violas, & Senese, 1992, p. 387; and Stedman & Jordan, 1986, pp. 12–41). In the New American High Schools and elsewhere, raising academic standards has often been, in part, a response to these state-level initiatives.

number of New American High Schools is currently too small to provide answers to these questions, their experiences will certainly provide some preliminary results.

There is also lingering uncertainty about whether some approaches that have been tried in the past are effective at all. On the one hand, as state legislatures have raised graduation requirements, more students are completing rigorous mathematics courses (U.S. Department of Education, 1996) and demonstrating higher mathematics achievement (Gorman, 1994). On the other hand, several researchers warn that simple approaches—like requiring students to complete more academic credits—do not necessarily lead to higher academic achievement (Porter, 1995; Wilson & Rossman, 1993; Clune & White, 1992). They argue that students must complete more difficult courses, not simply additional credits, to demonstrate higher performance (Burkam, Lee, & Smerdon, 1996; Burkham, 1998). The absence of additional rigorous content may help explain why high school seniors in schools requiring three years of mathematics do not achieve higher standardized mathematics test scores than seniors in schools requiring only two years of mathematics do (Hoffer, 1997).

Among leaders of the New American High Schools, there are also diverse opinions about which changes in standards are the right ones to make. As a result, no single model has emerged as the best vehicle for communicating higher standards or even measuring higher achievement. However, all of the schools that are demanding more from students agree on one thing: raising standards cannot stand alone as a strategy for improving student achievement. It must be woven together with other changes into a multifaceted package of new education approaches that also includes comprehensive support services for students.

Finally, New American High School reformers have found it will take more than raising the bar to raise achievement. Simply establishing more rigorous standards often is not enough to communicate that high performance is expected of all students. While much of the research on models of school reform refers to raising standards and increasing expectations interchangeably—or views one of these as a strategy for achieving the other (Wang, Haertel, & Walberg, 1998; Quellmalz & Knapp, 1995), the two ideas can also be viewed as separate and distinct. Specifically, many of the New American High Schools have established the high standards: their graduation requirements are higher than those of their states or districts. In addition, through daily encouragement, the absence of a tracking system, and challenging classroom assignments, they are

also communicating high expectations: every student can meet these high academic standards.

In the discussion that follows, four of the New American High Schools, Sussex Technical High School, Gateway High School, Chicago High School for Agricultural Sciences, and David Douglas High School, illustrate how schools have raised standards and students are hearing the message of higher expectations.

Approaches to Raising Standards and Expectations

New American High Schools practice four main approaches to raising academic standards as part of broad-based school improvement. Schools:

(1) eliminate low-level courses and the general track,

(2) increase the level and challenge of required course sequences,

(3) raise graduation requirements in terms of credits and/or grade-point average (GPA), and

(4) raise standards for special needs students.

In the New American High Schools, educators often combine more than one of these approaches, but they always do so in conjunction with new and expanded student services.

These approaches to raising academic standards are described in detail below. Four of the high schools mentioned use higher standards as a centerpiece of comprehensive reform. Examples from some of the other New American High Schools are also provided.

Sussex Technical High School

Located in a rural area of southern Delaware, Sussex Tech led Delaware's public school improvement effort by establishing a new mission while simultaneously launching comprehensive school reform. Originally an area vocational school with a part-day program, the school traditionally attracted some of the lowest performing students in its district. Like students at many other U.S. high schools, a large proportion of Sussex Tech students had been tracked into low-level academic courses at their home

schools, and these courses were failing to prepare them for either the workplace or further education. Students who completed this general track met state academic credit requirements but were largely marking time while waiting to graduate or drop out of school.

To move its program from the bottom of the academic ladder, administrators at Sussex Tech shifted the school's mission from providing a shared-time vocational program to offering a comprehensive high school education. At the same time, by adding only challenging academic courses and introducing more stringent graduation requirements, Sussex Tech has pursued one of the most comprehensive strategies for articulating higher academic standards with broad-based school improvement of any New American High School.

For educators at Sussex Tech, adopting high academic standards for all students meant pursuing all of the approaches described above. First, the school became a member of the High Schools That Work (HSTW) network established by the Southern Regional Education Board (SREB). One of the key tenets of the SREB education philosophy is that all students—including vocational students—should be held to the high academic standards that are the foundation of a college preparatory curriculum.[7] Curriculum designers at Sussex Tech embraced the philosophy of the HSTW model and eliminated the low-level sequence of academic courses in which vocational students have traditionally enrolled: general mathematics, general science, and general English. They also upgraded the content of vocational courses by integrating college preparatory academics with technical instruction in four career clusters: health and human services, industrial and engineering technologies, business technologies, and automotive technologies.

The practices of eliminating low-level general courses and starting all entering students in a college preparatory sequence have gained enthusiastic support at many of the New American High Schools. These practices are primary vehicles for communicating high expectations to all students. For example, Fenway High School in Boston completely eliminated tracking, and Gateway High School in St. Louis and New York's High School of Economics and Finance offer only Algebra I as the mathematics course for 9th-grade students.

[7]For SREB, these high academic standards translate into four years of college preparatory English, three years of science at the level of biology or above, and three years of progressively more challenging mathematics, beginning with the second part of Algebra I.

There are several approaches to raising academic standards in the context of school improvement; there may be value in combining two or more of them to achieve the most successful results.

At Sussex Tech, a new perspective on graduation requirements was the second strategy for raising academic standards. Credit requirements were increased, and all students are now expected to complete three credits each in mathematics and science, and four credits in English. Third, in addition to raising the number of required mathematics and science courses, Sussex Tech has enhanced the rigor of the courses and course sequences available to students. For example, in mathematics, students entering with low mathematics skills take a three-course sequence that includes Applied Mathematics I, Applied Mathematics II, and Applied Algebra. Students who have completed more mathematics in middle school may start with Algebra I and later complete Algebra II and geometry. They also enroll in trigonometry or precalculus if they take a fourth year of mathematics. The required sequence of science courses varies by career cluster. For example, students in the health and human services cluster take chemistry and anatomy/physiology after completing biology in the 9th grade. Students in the industrial and engineering technologies cluster take either Principles of Technology I and II or Physics I and II after taking biology in the 9th grade.

The course sequence for students in the health and human services cluster on the following page illustrates both the large number of academic credits students must complete and the college preparatory level of instruction.

For many of the New American High Schools, challenging students to meet higher academic standards has demanded a new perspective on what schools must do to partner with students in the learning process. School administrators and teachers have concluded that raising academic standards goes beyond creating a new curriculum to developing a more comprehensive approach for providing academic and social support services. Sussex Tech is a prime example of this new way of thinking. Students at Sussex enroll on a first-come, first-served basis. This admissions policy attracts applicants with a wide range of academic and technical abilities. To be successful in translating higher academic standards from a plan to reality for this diverse group of students, Sussex administrators support higher expectations for all—including a large population of special needs students—the fourth and final approach to raising academic standards. In doing so, they maintain a multifaceted program of support services to help students with diverse needs meet these new demands.

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SUSSEX TECHNICAL HIGH SCHOOL
Required Course Sequence for the Health and Human Services Cluster

GRADE 9

Course Title	Credit
English	1
Applied Mathematics I/ Algebra I/Geometry I	1
Biology	1
Civics/World Affairs	1
Health/Physical Education	1
Introduction to Technical Studies	1
"Techademic" Skills	1/2
Keyboarding	1/2

GRADE 10

Course Title	Credit
English	1
Applied Mathematics II/ Geometry/Algebra II	1
Chemistry	1
Economics	1/2
Physical Education	1/2
Driver Education	1/4
Career Skills	1/4
Core Technical Course	2
Related Technical Course	1/2

GRADE 11

Course Title	Credit
English	1
American History	1
Algebra II/Geometry/ FS Trigonometry/Precalculus	1
Elective	1
Core Technical Course	2
Related Technical Course	1/2
Related Technical Course	1/2

GRADE 12

Course Title	Credit
English	1
World Cultures	1/2
Anatomy/Physiology	1
Elective	1
Core Technical Course	2
Related Technical Course	1 1/2

A key element of student support services at Sussex Tech is a practice of pairing special education teachers (known as "shared-approach teachers") with academic teachers. In some classrooms, academic teachers and shared-approach teachers alternate teaching. In others, the shared-approach teacher provides one-on-one assistance to both special education and other students. The school's flexible schedule allows shared-approach teachers to meet with their academic counterparts regularly, even daily, if necessary. At a minimum, teams meet on a weekly basis. The school's special education coordinator reports that under this format, visitors often have a difficult time distinguishing special education students from other students.

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New and expanded support services for all students include comprehensive after-school tutoring, a 9th-grade career development and remediation program, and a student assistance team. The teams, made up of an assistant principal, a special education coordinator, the Title I coordinator, a school psychologist, a social worker, and the school youth officer, meet monthly to examine referrals from teachers who have identified students with emotional, behavioral, or academic problems.

Gateway High School

Located in an inner-city neighborhood in St. Louis, Missouri, Gateway High School was created in 1992 in response to a federal court order to desegregate the St. Louis School District. Now that it is one of 26 magnet schools in the St. Louis district, Gateway has become the premier high school for engineering and high-technology science careers. High academic standards were a natural part of the curriculum for Gateway given the school's origins and mission. Because the school is a federally mandated magnet school, district administrators needed to establish a curriculum that would attract students from all segments of the St. Louis population. Across the country, a challenging college preparatory curriculum has proven to be a major attraction for students and a key mechanism for achieving school desegregation. Gateway has been no exception. The school attracts an overflow pool of applicants from throughout the district.

Although their physical environments differ, the approach to raising academic standards at Gateway is similar to the path taken by Sussex Tech. School leaders at Gateway have also used a multipronged school improvement effort that organizes the curriculum around four career-related areas of study. Gateway education leaders eliminated the low-level general curriculum that many students had previously followed and raised graduation requirements beyond those mandated by the Missouri Department of Education. Now all Gateway students participate in a fully integrated curriculum that includes a sequence of high-level academic courses. They must complete an exacting mathematics sequence, including algebra, geometry, advanced algebra with college algebra, and trigonometry with analytic geometry. The required science sequence includes biology, chemistry, and physics. These college preparatory courses are required for all students who also must complete a sequence of 11th- and 12th-grade courses in their chosen career

area: agricultural, biological, and health sciences; applied physical science; computer science and mathematics; and engineering technology.

The courses required for students who choose an environmental biological science major or an engineering chemistry major (in the engineering technology cluster), shown below, illustrate the high-level academic standards that are part of Gateway's curriculum.

GATEWAY HIGH SCHOOL
Required Course Sequence for the Environmental Biological Science and Engineering Chemistry Majors

Environmental Biological Science Major

9th GRADE	10th GRADE	11th GRADE	12th GRADE
Freshman English	American Literature 200	American Literature 300	Senior English
Social Studies 100	World History	American History	Ethics in Science & Technology
Algebra	Geometry	Advanced Algebra	Trigonometry
Biology	Chemistry	Physics	Environmental Science Intern I
Careers in Technology	Computer Science	Biology Elective	Environmental Science Intern II
Physical Education	Elective	Environmental Science	Environmental Science Intern III
Elective	Elective	Elective	Elective

Engineering Chemistry Major

9th GRADE	10th GRADE	11th GRADE	12th GRADE
Freshman English	American Literature 200	American Literature 300	Senior English
Social Studies 100	World History	Elective	American History
Algebra	Geometry	Advanced Algebra	Trigonometry
Biology	Chemistry	Industrial Physics or Physics	Advanced Chemistry
Careers in Technology	Computer Science	Fabrication	Elective
Physical Education	Elective	Electronics or Computer Electronics	Elective
Elective	Elective	Elective	Elective

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Raising academic standards often drives comprehensive school improvement in high schools that serve diverse populations and have varying structures and missions.

Students at Gateway are selected according to a lottery system designed to meet the racial balance requirements of the federal desegregation order. This system produces a student population with a wide array of academic experiences and competencies, ranging from poor to excellent. Combining sometimes poor academic preparation and high standards might not work at any high school without a well-planned and implemented program of student support services. Gateway uses several approaches to help all students meet the school's college preparatory academic requirements. They include the following:

- assigning students to small academies of 90 to 100 students during grades 9 and 10 that allow teachers to get to know individual students and monitor their academic and social progress,
- enrolling freshmen in a careers and technology course that introduces students to the school's four career clusters and provides basic preparation for the rigorous courses that come later in the curriculum, and
- using a computerized attendance system that helps teachers monitor students' class attendance throughout the day and that allows teachers to check in with students about any academic or personal problems that would cause them to miss a class or a series of classes.

Chicago High School for Agricultural Sciences

Chicago High School for Agricultural Sciences (CHSAS) is located in a predominantly white working-to-middle class neighborhood of southwest Chicago's Mount Greenwood community. For years, the 72-acre property was used as a common garden where the Board of Education rented portions of the land to resident farmers who raised and sold fresh produce. Established in 1985, CHSAS is a college preparatory magnet high school that offers a curriculum emphasizing high-level mathematics and science. Although the curriculum is broad enough to prepare students for any mathematics- or science-based career, specific courses are geared toward professional and

managerial employment in agriculture, including agribusiness, commodities exchange, food sciences, horticulture, veterinary sciences, and federal food quality inspection.

Like Gateway High, CHSAS also was established as a magnet high school under the terms of a court-ordered desegregation agreement. The court order required that between 65 and 85 percent of students enrolled had to be members of racial and ethnic minority groups, making CHSAS the only largely minority magnet school in a white Chicago neighborhood.

During its early years, CHSAS did not enjoy support from the surrounding community, which resisted the school's establishment, modernization, and expansion. Despite these uneasy community relations, there is high demand for places at CHSAS from students throughout Chicago, allowing the school to meet its federally mandated desegregation requirements. It is easy to see why. The school has gained a national reputation for academic excellence due, in part, to its challenging college preparatory curriculum, strong emphasis on holding students to high academic standards, and success in connecting high standards to a career-focused education.

CHSAS offers a college preparatory curriculum in which all students are required to complete high-level mathematics and science courses, in combination with four years of agriculture classes. Curriculum designers at the school worked with educators from the University of Illinois at Urbana-Champaign to develop a program of study that goes beyond state graduation requirements and would meet university entrance requirements. Like all of the New American High Schools, educators at CHSAS want to ensure that all students have the preparation necessary to pursue postsecondary education and training while also gaining skills for immediate work force entry. At CHSAS, all students are required to take the college preparatory sequence of classes illustrated on the following page.

CHICAGO HIGH SCHOOL FOR AGRICULTURAL SCIENCES
Required Course Sequence for Grades 9-12

9th GRADE (7.5 units)	10th GRADE (7.5 units)	11th GRADE (7.5 units)	12th GRADE (7.5 units)
English I	English II	English Literature	World Literature
Biology	Chemistry	Physics or Advanced Science Elective	Physics or Advanced Science Elective
Algebra	Geometry	Advanced Algebra/ Trigonometry or Precalculus	Advanced Mathematics Elective
Computer Science	Geography	U.S. History	Social Studies
Agricultural Careers & Leadership I	Agricultural Careers & Leadership II	Agribusiness I	Agribusiness II
Agricultural Science I	Agricultural Science II	Agricultural Career Pathways I	Agricultural Career Pathways II or Agricultural Co-op Education
Art	Music or Chorus or Band	Foreign Language I	Foreign Language II
Physical Education	Physical Education	Physical Education	Physical Education

In addition to finishing these high-level academic and technical courses, students at CHSAS also must complete a larger number of credits to graduate than are required by the Chicago School District. (CHSAS requires 32 credits, while the district requires only 21 credits for graduation.) To fulfill this requirement, the school day is considerably longer at CHSAS than at other area high schools, with classes beginning at 7:20 a.m. and ending at 3:36 p.m. Lengthening the school day is another clear example of a policy that educators at CHSAS have put in place to communicate to students that they are expected to meet higher standards than their peers at other area high schools.

A longer school day is important to students because it gives them the time for additional classes. However, student support services are even more critical, because they help give students the learning tools that are necessary to succeed in this program. Many of the students who enroll at CHSAS need extra help keeping up with the college preparatory curriculum, especially during the freshman year, when Algebra I and biology are frequent trouble spots. About one-quarter of these students turn to the peer-tutoring program for help. Peer tutors are members of the

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honor society or students who simply have good grades in the course they are tutoring. They are paid minimum wage to tutor other students during lunch, after school, or in their spare time.

Every student is assigned to an Advisory Teacher for the duration of his or her stay at CHSAS. These teachers help their students develop and maintain their four-year curriculum plans, help them with personal problems, record their attendance, and call home when the students are absent. During the daily Advisory Period, these teachers inform students about school news and activities, helping to build a caring "family-type" atmosphere.

David Douglas High School

David Douglas High School (DDHS) is located in a mixed-use, predominantly white, and lower-middle income area of Portland, Oregon. It is a large comprehensive neighborhood high school—with about 1,800 students—that offers a compelling example of how high schools can improve student achievement by combining higher academic standards with a career-focused curriculum and alternative assessment methods.

School reform first arrived at DDHS in the early 1990s when a combination of local and statewide concerns motivated school leaders to look at the school's curriculum and education approach. At the local level, community members and educators were questioning whether they were meeting the needs of students who were not immediately going on to four-year colleges and universities. Simultaneously, state, business, and education leaders expressed concern that many high school graduates were not acquiring the employment and academic skills necessary to meet the demands of the changing economy in the Pacific Northwest. In response to these issues, DDHS was chosen to lead the state in piloting a program to prepare the new Oregon work force.

Since that beginning nearly a decade ago, DDHS has made higher academic standards the cornerstone of school reform. School leaders are achieving these higher standards by weaving together more rigorous school-level graduation requirements and changes that were later mandated by the state. First, during the early 1990s, DDHS introduced an integrated career-based curriculum approach and added two new graduation requirements: students must complete a certificate of initial

mastery (CIM) and achieve a 2.0 grade-point average. The CIM was designed around high academic standards and portfolio assessments and was independent of any state assessment tests.

Several years later, during the 1997–98 school year, Oregon began using a statewide CIM. The Oregon CIM combines a series of performance-based assessment tasks, evaluated through a portfolio process, and a content-based norm-referenced standardized test. This two-part assessment is linked to high standards in nine proficiency areas: mathematics, science, social studies, writing, speaking, reading, self-directed learning, technology, and positive health habits.

The early curriculum reforms gained support throughout the school. Teachers, administrators, and students at DDHS became comfortable with the new career-focused curriculum and portfolio-based assessments and recognized their value for improving student learning. However, several years into this successful transition, state-mandated standardized testing became part of the assessment landscape, an approach that seemed at odds with the flourishing alternative assessment methods. As a result, there was some concern about the viability of combining two different approaches to raising academic standards and how students and teachers would respond.

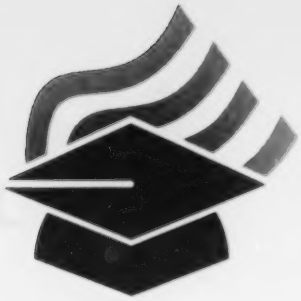
While there were some growing pains, educators at DDHS have begun to reconcile these two approaches so that they can focus even more on improving student achievement. They are using the new state testing requirements in several ways to reinforce their goal of meeting high academic standards through career-focused education:

- Students are encouraged to use performance-based evidence drawn from courses such as PACE I and PACE II (the 9th- and 10th-grade career development classes) in the portfolios that they develop for CIM assessments.

- Teachers who chair the school's seven career major areas have developed planning goals that are linked to the nine proficiencies in the state's CIM assessment.

- DDHS educators have expanded their focus on developing curriculum for elective courses and are connecting them more closely with the core courses that fulfill CIM requirements. These activities are likely to increase the career-related content of core courses that are used to develop students' CIM proficiencies.

Conclusions and Lessons Learned



Combining higher academic standards with other school improvement strategies is emerging nationwide as an important way to raise student achievement. In many cases, higher standards have been mandated by changes in state or district standards. In others, especially among the New American High Schools, individual schools like CHSAS, Gateway, and Sussex Tech have gone beyond state and district graduation requirements. They have recognized that all students can benefit from a college preparatory curriculum, but only if educators establish high standards, communicate that these standards really do apply to all students, and provide support services that help make high expectations a reality.

Across the country, some schools—like many of the New American High Schools—are already putting action plans for establishing higher standards into place and seeing better academic performance. Others are still weighing alternative approaches, such as raising graduation requirements or minimum acceptable grade point averages and considering how to combine higher standards with other elements of school reform. Some school leaders—especially those with highly diverse student bodies—may be wondering whether all students can meet higher academic expectations.

The experiences of the New American High Schools offer some lessons for schools. Their efforts demonstrate a number of important lessons that can apply to many other schools:

- Raising academic standards often drives comprehensive school improvement in high schools that serve diverse populations and have varying structures and missions.
- There are several approaches to raising academic standards in the context of school improvement; there may be value in combining two or more of them to achieve the most successful results.
- High academic standards can be integrated with other reform strategies, especially as a complement to career-focused curricula.
- An expanded program of support services for students is the necessary foundation for turning higher expectations into higher achievement.

Create Small Learning Environments Enabling Students and Teachers to Work Together

Introduction

The creation of smaller learning environments has become the focus of systemic reform efforts in many high schools, particularly during the last decade. Proponents of smaller learning environments believe that students learn better and faster when grouped together in smaller clusters. When learning environments are smaller and more intimate, teachers and students can more easily get acquainted; teachers can spend more time with individual students; and students seem to benefit from the sense of belonging to a community. Grouping teachers and students into more cohesive, family-like structures also makes it easier to create opportunities for students to apply skills to real problems, to make connections between classroom activity and work, and to integrate learning across disciplines. Though smaller groups are not a sufficient condition for raising academic achievement and improving other student outcomes, a growing number of schools are viewing them as a necessary condition.

A substantial body of research has established the association between smaller learning environments and positive student outcomes. Few educators doubt that "small is good" for students, but most agree that the effect of small learning groups is probably indirect rather than direct (Lee & Smith, 1995). That is, school or class size by itself is unlikely to have a positive impact on student outcomes. Rather, other practices that do appear to make a difference, such as raising academic standards and giving students plenty of one-on-one support, are most easily realized in smaller cohesive groups. Schools that introduce new practices such as alternative assessment and integrated curriculum often begin by creating more intimate, supportive environments to get the most out of these other reforms. For this reason, it is difficult to sort out what has the most beneficial impact on student outcomes: smaller classes (or schools) or other reform strategies that depend on small environments to be effective.

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There are many ways to create smaller learning environments, and most do not involve capping total student enrollment.

School reformers have tried a number of different strategies to achieve smaller, more intimate learning settings. Usually schools are not in a position to decrease enrollment. More typically, reformers build "schools-within-schools." That is, students and faculty within one large school are divided into smaller groups, often unified by a particular career or discipline. Such schools-within-schools enjoy varying degrees of autonomy from the "parent" school. Students take all or most of their classes within these smaller communities of students, faculty, and staff. A less common strategy is making the commitment to "start small and keep small" when a school is first established. A third approach is to keep cohorts of students together as much and as long as possible, maximizing their exposure to each other and to certain teachers, one of whom may also function as an advisor/mentor. Taken as a whole, the New American High Schools are a laboratory in which all of these methods to reduce the size of learning environments are being tried.

Smaller Is Better: Two New American High Schools Commit to Smaller Learning Environments

The two New American High Schools selected to illustrate this reform strategy are Encina High School in Sacramento, California, and Fenway High School in Boston, Massachusetts. Both of these schools began with an extraordinarily challenging and hard-to-serve student bodies. One—Fenway—started from scratch over a decade ago as a small alternative program serving at-risk students within a large comprehensive school; the other—Encina—began as a traditional comprehensive high school with such badly deteriorating conditions that things could only improve. Both grounded reform efforts on the premise that troubled students do better in smaller, nurturing learning environments.

Encina High School

Sacramento, the capital of California, is a highly diverse metropolitan area that includes spacious middle-class communities as well as several much poorer enclaves. Encina High School is located in one of the most troubled, violent, and poverty-stricken neighborhoods in Sacramento. Indeed, there is no New American High School operating in a more volatile and socioeconomically deprived environment. The same exter-

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nal conditions that motivated reform in the early 1990s not only still prevail but also have worsened over the last six or seven years:

- More than one-third of families with children at Encina High are on welfare, and the percentage is rising.
- Half of the students qualify for federal free or reduced-price lunch programs.
- The neighborhoods surrounding this school have large numbers of people moving in and out every year.
- The school routinely experiences an increase in enrollment of 50 percent throughout the school year, but loses about 46 percent of its student population by the year's end due to the high rate of families leaving the area.
- More than 30 languages are spoken on this highly diverse campus where 43 percent of the population is white; 25 percent, Latino; 20 percent, African-American; and 8 percent, Asian.
- Before whole-school reform was launched in 1993, school administrators routinely coped with a dozen fights a week, including knifings and an occasional riot.
- Encina High was a notoriously unsafe place to be for teachers and students. Morale, attendance, and academic achievement were among the lowest in the district.

Today Encina High is recognized nationally as a career academy model and has seen substantial improvements in school climate, despite continuing deterioration in the surrounding neighborhoods. Fights among the school's nearly 1,000 students are now a rare event; the number of suspensions has fallen; attendance is up; the completion rate rose 15 percentage points last year; teacher morale has improved; and parents are much more involved. And while scores on academic achievement tests have yet to rise dramatically, many other outcomes have improved. For example, the number of students taking Advanced Placement exams has doubled since 1993; the number of students taking college entrance exams has also increased substantially; and the percentage of graduating seniors planning to attend two- or four-year colleges rose 11 percentage points last year. These improvements are undoubtedly due to a variety of efforts, but the

determination to create and sustain smaller, safer, and more family-like learning environments has been a key strategy from the beginning. Encina reformers believed that this was the single most important step they could take to turn things around at the school.

Schools tend to see the benefits of smaller learning environments appear in stages.

Encina High chose the career academy model as its primary vehicle for creating smaller learning environments. The renowned Health Careers Academy (established in 1989), a classic school-within-a-school, assembled a few hundred students, separating them from the larger parent school. Beginning in the 10th grade, students took academic and vocational and technical classes together, participated in internships together, and worked with the same group of teachers. While the rest of the school continued its decline during the early 1990s, the Health Careers Academy quickly became a bright spot where students did well. In fact, according to the principal, the Academy was so successful that it "created resentment and divisiveness among the rest of the staff and students who continued to drop out left and right."

Hoping to offer all students the positive environment that the Health Careers Academy students experienced, school leaders created two more academies in 1992: the Academy of Business Careers, covering accounting, finance, and media communications; and the Graphic Design Academy, where students learn desktop publishing, print design, and related graphic design skills. Within the next few years, two more academies were added: The Criminal Justice Academy and the Human Services Academy. An academy-like program required for 9th graders, the Quest Academy was added to ensure that the youngest and most vulnerable of Encina students also belonged to a cohesive and supportive community. Not stopping there, Encina later added a district-initiated Opportunity Program for 40 "at-risk" 9th graders. Block scheduling, which divided the school day into four 95-minute periods, was established to support the career focus of the academy structure.

The academies of Encina range in size from about 40 to 250 students and are staffed with teams of four to six teachers. Most students are enrolled in an academy and take many but not all courses together. Encina has worked to find a good balance between enrolling enough students in an academy to make it possible for each academy to offer as many classes as possible, including mathematics and science, and keeping enrollment low enough to maintain the family-like environment.

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Students at Encina are eager to talk about the support they receive from their teachers and each other.

"I've noticed that my classes. . . are pretty small. That gives the teachers more time to talk with the students, work out problems, whether academically or personally," says one student.

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Schools that try to create a nurturing, caring environment find that grouping students and teachers in small clusters allows them to get to know and care about each other.

"At home things are different. Many students don't have the same support they get here," says another.

In the words of another student: "Teachers in my academy meet regularly. If a student was having a problem with a teacher or was having problems with grades, they would both meet to discuss it. They don't want us to have bad grades. If our attendance was falling, they'd try to meet with us to improve that. They're looking out for us. They meet to talk with us a lot."

Fenway High School

The leaders of Fenway have taken the concept of smallness a step further than most schools, including the other New American High Schools. They not only have kept the total student enrollment low (about 240 students) but also have divided the school into even smaller schools-within-a-school. All students belong to one of three well-established and highly autonomous academies—or "houses"—where they take all of their courses and participate in intensive work-based learning experiences. Within each house, students are further divided into grades. Thus, each student spends most of his or her time with the same 20 or even fewer students and a team of four teachers and a counselor.

Unlike most of the other New American High Schools, Fenway was founded as an alternative school for low-achieving students at risk of dropping out. Many Fenway students were failing at other schools, and many had been asked to leave due to disruptive behavior. School leaders believed that these students were best served with cohesive and intimate learning environments. In fact, the starting premise for Fenway was that large comprehensive schools do not usually work well for at-risk students. Started in 1983 as a program within the Boston English High School, Fenway served 110 students in grades 10 through 12. By

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1985, it had become a separate school but was still housed within the larger school. This arrangement soon became too confining for the far-reaching reforms envisioned by school leaders. In 1990, the school moved into space at Bunker Hill Community College. In 1991, the 9th grade was added, and enrollment soon reached its current level of 240 students.

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The benefits of grouping students into smaller clusters can become apparent quickly.

In addition to keeping total enrollment low, decision makers at Fenway chose the academy model, or "houses," which has evolved gradually over the last 14 years.[8] In 1985, the school was approached by the nearby Children's Hospital, where hospital administrators were looking for a way to reach out to the local community. After three years of planning and negotiation, the partnership that became the first house at Fenway was formed. By 1990, it was clear that the 80 students in the Children's Hospital House (or "Collab" as Fenway students and staff call it) were doing better academically than other Fenway students, despite the fact that these students were the most low-achieving and at-risk of Fenway students. The combination of the highly motivating work-based learning experiences that students had at the hospital with the strong connection each student had with his or her house is thought to be key to the success of this earliest experiment with employer collaborations.

The commitment to maintaining small learning environments was reinforced when Fenway joined the Coalition of Essential Schools in 1989. Bolstered by the principle that teachers should be responsible for no more than 80 different students at one time, school leaders began to consider partnerships with other employers to create new houses. In 1992, the school established the CVS Pharmacy House and the Museum of Science House (or "Crossroads") in quick succession.

In 1999, each of the three houses has about 80 students. Students join a house immediately upon enrollment as 9th graders because school leaders feel it is important to ensure that the youngest students join a

[8]Fenway's houses are unlike academies in the other New American High Schools in one important respect. Each house not only has a career focus but also collaborates closely with an employer (for example, CVS Pharmacy, the Museum of Science, and Children's Hospital). The employers work closely with the school in many areas, including establishing internships, job shadowing, and mentoring experiences, and contributing toward curriculum development and assessment and financial support.

small and cohesive group as soon as possible. Students take all of their courses within their house for the rest of their tenure with the school. For example, the 20 9th graders in the Children's Hospital House take all of their classes together for all four years of high school. As a result, strong networks form among students and teachers within each house, especially within each grade.

The benefits of smaller learning environments can be fully realized only when this strategy is combined with other reforms.

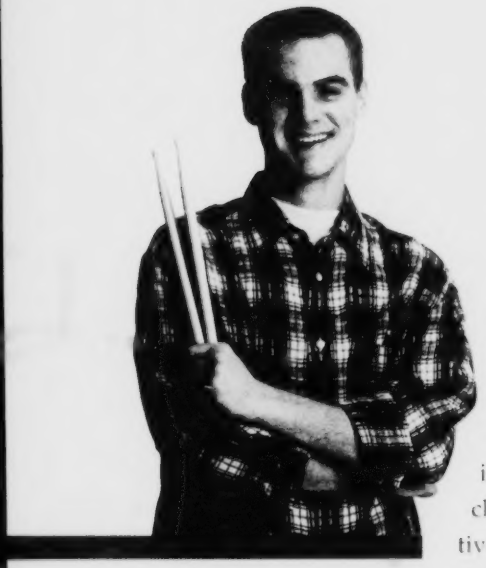
Each house is staffed with about four teachers, three of whom are responsible for teaching one of three academic subjects—humanities, mathematics, or science—and two or three interns. Advisory groups, consisting of approximately 20 students and their teacher–advisor, meets three times a week, and the advisors discuss students' academic and interpersonal needs. Through advisory meetings, teachers and students reinforce their close connections with each other, and discussions are often very spirited. Teachers routinely phone students at home at night to help with their homework or just to "check in." Each house also has a clinically trained counselor as well as a coordinator funded by the employer/collaborator who is responsible for the school's extensive work-based learning program. The faculty members of each house work closely together, meeting for many hours a week to plan, discuss problems, develop integrated curriculum units, and coordinate learning activities.

The houses, which offer tight-knit and supportive "families" of students and teachers, are at the core of Fenway's approach. Smallness is valued at three levels: the school level (total enrollment is 240); the house level (where enrollment is about 80 students per house); and the classroom level (where enrollment can be as low as 10 students and rarely is higher than 20). Although the school is practicing a number of other cutting-edge reforms, most notably in the area of integrated curriculum and school-to-work practices, the built-in small learning environments provide the foundation on which the other reforms rest.

Conclusions and Lessons Learned

A smaller learning environment has long been regarded as conducive to learning, especially for troubled students. Many of the New American High Schools have attempted to create smaller learning environments in the hope that students and teachers can work more effectively together when they know each other well. A number of lessons have emerged from these experiences, which demonstrate the following:

- ★ There are many ways to create smaller learning environments, and most do not involve decreasing or capping student enrollment.
- ★ Combining smaller learning environments with other reforms enhances the effectiveness of other reform efforts. Career academies are both a frequent and promising approach to creating smaller learning settings.
- ★ Schools that try to create a nurturing, caring environment find that grouping students and teachers in small clusters is a simple but compelling way to allow teachers and students to get to know and care about each other.
- ★ Smaller size by itself does not always lead to improved student achievement. The benefits of smaller learning environments are fully realized only in combination with other strategies that enhance student learning.
- ★ The benefits of grouping students into smaller clusters can become apparent quickly, even within a year or two.
- ★ Schools may see the benefits of smaller learning environments appear in stages. First, the morale of students and teachers improves, and students become more engaged in school. Second, school climate and student discipline begin to improve, with corresponding improvements in attendance rates and graduation rates. Third, students begin to take on and eventually succeed in new challenges, such as taking advanced placement or college-level courses, and scores on achievement tests and other assessments begin to rise.
- ★ Small schools are economically feasible and attractive to private funders.



Structure Learning around Careers and Students' Interests

Introduction

One of the key functions of schooling is transmitting critical knowledge to children so that they can function effectively as parents, citizens, and participants in the work force (Brint, 1998). In a growing number of schools, achieving this goal has come to mean holding all students to high academic standards, exposing them to a wide array of career options, and teaching the values of citizenship and commitment to a productive economic life (Graham, 1995.) Few would disagree that both academic instruction and vocational training are critical for a society to develop adults who succeed in their many roles. However, there has been less agreement on how to provide these two curricula, academic and technical, in what relative proportions and combinations, and to which groups of students. For more than a century, battles have raged among educators over these issues, and the pendulum emphasizing academic versus vocational education has swung back and forth more than once (Cremin, 1961; Angus & Mirel, 1995).

In many schools, particularly the New American High Schools, educators have resolved these differences by combining the best aspects of two educational worlds. They are marrying academic and career-focused instruction—through both classroom work and outside activities—with the goals of improving student motivation and helping young people see the relevance of their studies.

Using career-focused education as a way to improve student achievement has led all of the New American High Schools to adopt new methods for structuring curricula and new forms of school organization. Some use a single career area as the focus for the entire school. Others have established several "schools-within-a-school" in which each unit is organized around a different career or interest area, and others offer students a choice among several career majors and allow

them to change their majors but still connect curricula to career areas or industries.

This section describes these variants on career-focused models, shows how they have altered the education experiences of students, and identifies how educators at the New American High Schools are using career-focused education to improve student motivation and achievement.

Models of Career-Focused Education

In recent years, several models of career-focused education have emerged in U.S. schools. They share three important characteristics:

- First, all of the models structure curricula around either a specific career area or a broad industry. That is, the career area or industry serves as an organizing theme for curriculum development. Courses and, to a varying degree, course content are linked to industries—such as agriculture, health services, or financial services—or to occupational clusters—such as residential construction, natural resources, or communications technology.

- Second, these career-focused curricula are integrated across academic disciplines and between technical and academic subjects, and they incorporate both classroom and work-related activities. This type of integration requires a level of collaboration across disciplines that is not commonly observed in traditional comprehensive high schools and, as a result, significantly affects the experiences of both students and teachers.

- Third, students, and sometimes faculty as well, are grouped in one of the career clusters or industries (when there is more than one offered), usually based on their interests. Students with the same career focus may take all or some of their classes and outside career-related activities together. Through this broad industry or career cluster approach, proponents avoid either a narrow vocational focus—which does not prepare students for further education—or the purely academic content that characterizes many college preparatory curricula.

In schools adopting comprehensive education reform, career-focused education comes in many shapes and sizes. In the New American High Schools, educators have chosen to follow one of two models:

academies or career majors. Educational philosophy, school size, and historical factors have combined to influence the choices that communities and schools make about how to implement career-focused education.

Academies are career-theme schools, or "schools-within-schools" in which groups of students take several classes per year together with a single group of teachers. In a multiple-career academy, each unit, or academy, has its own curriculum that focuses on a single career or industry theme (Kemple & Rock, 1996, p. 1).

Students apply to an academy while still in middle school and select that school from other choices, in part, because an academy's curriculum matches a particular career or other interest.[9] Many academies are also magnet schools that are using a defined career focus, along with high academic standards, to attract the racially balanced mix of students required by a court-mandated desegregation order. Among the New American High Schools, the Chicago High School for the Agricultural Sciences (CHSAS), Boston's Fenway High School, New York's Magnet High School of Economics and Finance (EFA), William H. Turner Technical High School in Miami, and Encina High School in Sacramento, California, are either single- or multiple-career academies.[10] CHSAS and EFA are also magnet schools.

A second group of New American High Schools use a different model. Students choose among career majors that they select once they start high school, typically at the end of the 10th grade. In these schools, students from several different majors generally take their academic classes together. For example, students from diverse career majors, such as health sciences, business and management, and natural resources, study together in the same algebra and social studies courses. Only in technical classes, and occasional academic courses (such as the 12th-grade arts and literature course for students in the arts and communications career major at David Douglas High School), are students separated according to their career interests.

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[9]In practice, many academies have established excellent reputations for their academic curricula and are successful in sending graduates to postsecondary education. As a result, some students are attracted to these schools even when they do not have a strong interest in the school's career theme.

[10]Encina High School uses an academy model, but students do not choose a career-based academy placement until the end of the 9th grade.

Five of the New American High Schools use a career major approach. These are Sussex Technical High School in Delaware, the high schools in the Thompson School District in Colorado, Walhalla High School in South Carolina, David Douglas High School in Portland, Oregon, and Gateway Institute of Technology in St. Louis, Missouri.[11]

The Nexus between Career-Theme Programs and Student Achievement

Why are schools and school districts choosing to organize student learning around a career or other theme area? A growing body of research—most of it on career academies—suggests that involving students in theme programs can have important salutary effects on markers of successful education programs. These markers include better high school attendance, lower dropout rates, better grades, more career planning by students, fewer teenage pregnancies, and less teenage drinking (Dayton, Raby, Stern, & Weisberg, 1992; Kemple & Rock, 1996; Crain et al., 1997; Foothill Associates, 1997).

At the New American High Schools, educators are using career-focused curricula to achieve several specific goals. These goals are to:

- create more positive attitudes about school by increasing students' engagement in the learning process,
- improve the coherence and quality of the curriculum and instruction by fostering mutual respect and cooperation among teachers,
- increase students' commitment to learning by demonstrating the direct connection between the curriculum and future career goals, and
- improve student motivation and discipline by demonstrating—in the workplace—the importance of academic success for future career advancement.

[11] In some respects, Gateway uses a model that is a cross between the academy and career major models. It is a single theme mathematics and science college preparatory high school that prepares students for high-technology science careers. However, within this broad span, students specialize in one of four targeted career majors, such as engineering technology or computer science and mathematics.

The following discussion describes three of the New American High Schools that have used a career-theme curriculum through some type of academy model.

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Theme-focused education is a natural way for smaller schools in large school districts to launch comprehensive school reform.

Nearly all of the New American High Schools have chosen career-theme education as a key element in their comprehensive school improvement efforts. However, these three were chosen for discussion because their connection with an industry or career cluster is a basis for innovation in nearly every aspect of the curriculum. As a result, their experiences highlight the many ways in which career-focused education is a vehicle not necessarily to place students on a particular career path, but to change school climate, enhance student motivation, and improve academic achievement. It is important to note that "schools-within-schools" or even academies are not always structured around careers nor are they typically aimed at getting students to choose a particular career. While the academies, houses, and clusters in the New American High Schools tend to be career-focused, many schools succeed in organizing curriculum around other themes, such as performing arts or general sciences, and achieve the same objectives of engaging students.

Chicago High School for Agricultural Sciences

At the Chicago High School for Agricultural Sciences (CHSAS), an integrated academic and technical curriculum centers on a broadly defined agricultural theme. Using this apparently surprising focus—for such a quintessentially urban area—school leaders have created one of the most successful schools in the Chicago Public School system. Students are highly involved in their classroom work and career-related outside activities, such as local and state science fairs and leadership activities sponsored by the FFA.[12] The extent of their engagement can be measured by performance statistics that are benchmarks for other schools in the district. In 1996–97, CHSAS recorded a chronic truancy rate of only 1.4 percent, while the corresponding rate for the entire Chicago school district was 4.6 percent.[13]

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[12]Formerly Future Farmers of America, known since 1988 as the National FFA Organization.

[13]"Chronic truants" are students who were recorded as absent from school without a valid cause for 10 percent or more of the last 180 school days.

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A broadly defined industry focus—such as agricultural science at CHSAS—can be particularly beneficial as the foundation for a high-level, college-oriented program.

Equally impressive, the school's 1996–97 graduation rate was 92.3 percent, far exceeding district (65.2 percent) and state (81.6 percent) averages.

CHSAS most definitely is not a vocational school. Despite its single-industry focus, the curriculum is not designed to prepare students for specific occupations in the agricultural sciences. Instead, the primary goal is to equip students for success in four-year colleges. As a result, from its inception in 1985, CHSAS has equally promoted strong academic and technical programs. According to its principal—and numerous articles in local newspapers, national business magazines, and publications written for the education community—the school is a college preparatory mathematics and science magnet school with high academic standards that also prepares students for a wide range of careers in agriculture. The curriculum at CHSAS gives students a unique education in agribusiness, commodities exchange, food sciences, horticulture, veterinary sciences, and federal food quality inspection. These are all courses that are unavailable in any other Chicago public high school and are applicable to a wide range of careers in the sciences, business, and health care.

The career-focused curriculum at CHSAS appears to influence student motivation in a variety of ways. First, the agriculture industry serves as a focal point for many integrated, project-based activities that help students see real-life applications for their academic assignments. For example, in an annual project, students prepare a traditional Thanksgiving dinner and complete nearly 20 coordinated assignments for their academic and food science courses. They conduct a nutritional analysis of the meal, develop recipes to meet different dietary requirements, and write a newspaper article about their experiences. This project brings together teachers and students through assignments that involve the mathematics, science, social studies, English, horticulture, and food science curricula. Through the project, students learn how academic knowledge in subjects like mathematics and science is critical for food science careers and, more generally, for understanding personal nutrition issues.

Second, career-focused education at CHSAS has improved student motivation and achievement by creating a vehicle for effective teacher collaboration. For example, chemistry teachers work closely with their colleagues in food sciences to develop curricula that meet learn-

ing objectives in their respective academic and technical disciplines. Often these lessons involve analyzing the composition of various foods, the chemistry of food interactions, and the relationship between food and human nutrition. Both vocational and academic teachers indicate that individually and collaboratively they make equally important contributions to their students' education. These teacher attitudes have translated into an integrated, highly focused curriculum and challenging multidisciplinary projects that are strong motivators for students to apply themselves to their school work.

Third, the single-industry focus at CHSAS has led to a curriculum in which all students take the same core academic and technical agriculture-related classes during the 9th and 10th grades. Later, in grades 11 and 12, students pursue one of five career pathways by taking two elective credits in a more narrowly defined specialty area (food science; agricultural finance; agricultural technology; animal, plant, and environmental science; and horticulture). They also can choose between physics and an advanced science elective, and among advanced algebra/trigonometry, pre-calculus, and an advanced mathematics elective. Because all students are required to complete at least advanced algebra to graduate, every freshman must begin a mathematics sequence in 9th grade with an Algebra I class. Of course, not every entering student is prepared for Algebra I in the 9th grade. Consequently, students who enroll at CHSAS with inadequate mathematics preparation receive special tutoring or attend a remedial mathematics class during the summer prior to their freshman year.

In combination with the school's relatively small size, requiring the same curriculum for all 9th- and 10th-grade students has helped create a very positive school climate. When students share all of their classes, assignments, and many outside project-related activities, they collaborate, give each other mutual academic support, and experience a sense of community. For example, at CHSAS, students and teachers all know each other's names and help each other succeed through Saturday tutoring sessions and a peer tutoring program. Tutoring other students who need help with mathematics is one of the ways that more advanced students can demonstrate both their academic proficiency and their school spirit. The benefits of these positive attitudes are significant. Both students and teachers at CHSAS describe the school as a drug-free and crime-free school environment that has much less gang activity than some other schools in the district.

High School of Economics and Finance

Located in the heart of the city's financial district, New York's High School of Economics and Finance (EFA) is a part of the world's largest and wealthiest financial community. The school's developers—including Sanford I. Weill of the Traveler's Inc.—chose an academy model, with a highly focused economics and finance curricula, to help a diverse group of students see the potential of careers in the high-paying finance industry. EFA's primary goals are to help students prepare for college and careers, learn about economics and the financial services industry, use technology to enhance learning, and learn though active participation in classrooms, the workplace, and through community service.

Like CHSAS, at EFA the single-industry focus has led to a curriculum where all students participate in a similar set of learning situations through classes and outside activities. These shared learning experiences bring students and faculty together in a truly collaborative learning environment. Specifically, the school offers a core set of academic and finance courses that every student must complete. In addition, EFA gives all students opportunities for extensive interaction with members of the surrounding financial community, primarily through the Sanford I. Weill Institute and a three-step work-based learning experience program.[14] Seminars at the Weill Institute allow students to discuss and argue contemporary financial issues with some of the brightest minds in the financial services industry. These high school students and business professionals meet as equals in lively discussions on topics ranging from "Starting Your Own Business" to architecture and music appreciation. The Weill Institute also offers courses that are unrelated to finance. For example, one popular class teaches Zen guitar.

At EFA, one of the strongest elements of a career-focused education is a set of required workplace activities. All students participate actively in work-based learning experiences that reinforce their identification with the world of economics and finance and that continuously connect classroom lessons and real-world applications. Academy of

[14] EFA only offers the high-level curriculum designed by the New York State Department of Education to prepare students for the state's eight Regents examinations and the prestigious college preparatory Regents diploma.

Finance students must complete three work-based learning activities: 120 hours of unpaid community service, 120 hours of an unpaid internship, and 240 hours of a paid internship. To prepare for their internships, all freshmen are required to complete the New Horizons course, which teaches work-readiness skills, including interviewing techniques, resume writing, professional etiquette, and job application skills. This course is followed by a community service assignment that reinforces basic employability skills and prepares students for assignments in the financial services industry.

As a result of participating in the same required classes and work-based learning activities, by graduation day, every LFA student, regardless of interests and academic performance, has a repertoire of experiences that mirrors those of other students in this unique New York City high school. These shared experiences—much like those of new military recruits or freshmen in a small honors college—are a foundation for the kind of learning community that rarely develops in the typical comprehensive high school. Daily commutes to an unfamiliar part of the city, freshman seminars on interviewing and resume-writing skills, and extensive mentoring by successful finance professionals all help students feel like they are sharing an exciting and challenging path to successful future careers.

Teachers are another cornerstone of the learning community that is nurtured by the school's focus on a single career area. For two weeks before the beginning of the school year, all faculty participate in a summer internship and workshops led by the Council on Economic Education. During these seminars, teachers are asked to think of ways that they can use elements of economic theory in their daily lesson plans. For example, English and history teachers recalled a workshop in which they were asked how they could demonstrate to students the influence of economics on history and literature in the late 1920s. Both teachers cited the Great Depression as a foundation for some of the great books and ideas of the period. Through these activities, they integrated economic theory into their history and English courses, while meeting the tough standards of the Regents examinations. Teachers reported that their participation in these summer activities and visits to Wall Street firms help them integrate economic concepts into their daily lesson plans.

The world of high finance, with its challenges and demands for hard work and high skills, touches every aspect of the education experience at EFA. School leaders have used this focus to design a curriculum that has given a highly diverse group of students the skills and motivation for postsecondary education and professional careers. It has also given teachers an opportunity for continuous learning that keeps their classroom experience fresh and also connects them to an exciting industry.

William H. Turner Technical Arts High School

Many school districts do not have magnet schools or mechanisms for establishing single-career academies like CHSAS and EFA; however, they can create the same sense of community and shared goals by developing multiple-academy schools. In the multiple-academy format, large schools divide their student bodies into several smaller groups of students and teachers and organize instruction around several different career areas. In Miami-Dade County, Florida, for example, the William H. Turner Technical Arts High School has taken this approach, using a model that is now being emulated elsewhere in this large urban, southern Florida school district. With a dropout rate that is only one-third of the districtwide figure (2.7 percent versus 8.8 percent) and with one of the best attendance rates in the district, Turner Tech's approach is seen as a way to improve academic performance for even larger numbers of students in Dade County, which includes the city of Miami. At least two other "wall-to-wall" academy schools (where every student enrolls in an academy) are planned for the future.

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A wide range of themes, industries, or career clusters can be effective vehicles for delivering a combined technical and college preparatory curriculum.

An integrated curriculum and career-focused learning are the cornerstones of educational practice at Turner Tech. Students apply to one of the school's seven career academies while they are still in the 8th grade. Upon graduating, students earn both a regular high school diploma and a career-training certificate in one of 23 vocational/technical areas included in the seven academies. Currently, the academies at Turner Tech are Agriscience, Applied Business Technology, Finance, Public Service and Television Production, Residential Construction, Health, and Industrial Technology. These seven industries and 23 career clusters were identified based on projections of future labor market needs in southern Florida.

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Students are not selected for admission to Turner Tech based on their academic performance. Instead, they are chosen for their positive attitudes and motivation to learn (as measured by indicators such as attendance and discipline record) and their interest in a particular career area.[15] This admissions process leads to a student population with varying levels of academic preparation but all with a strong interest in the kind of education Turner Tech has to offer.

Each academy has a career theme incorporated into its academic and technical courses. For example, students in the Finance Academy complete a project on the stock market. In mathematics class, they calculate dividends and earnings of various stocks; in American history, they learn about the history of the stock market; in English, they research and write about stocks they might want to buy.

Students are taught by teams of teachers who meet regularly to plan and discuss courses and multidisciplinary activities. About 85 percent of students take classes together with others from their academy, and all teachers were hired into a single career area by the academy leaders. During the first two years of the school's existence (1993 to 1995), academic and technical instructors from each academy used a daily planning period to create projects and lesson plans related to the academy's career focus. They worked together to link content and schedules across their varied areas. Now these daily sessions have been replaced by twice-monthly meetings designed to help teachers continue curricular integration activities.

Many of the cross-disciplinary projects at Turner Tech show how teachers have succeeded in connecting academic and vocational learning objectives. They also demonstrate how teachers and students participate in long-term activities that help create a shared sense of mission and community. For example, in 1997, teachers and students in the Health Academy were called upon to solve an environmental and health problem that arose when pigeons roosted under the eaves of the building. In the academy's mathematics classes, students calculated numbers of migrating pigeons; in social studies, they learned about avian migration patterns; in health classes, they focused on disease transmission processes and the diseases carried by pigeons. Based on their research, academy students ultimately decided to release a large number of helium-filled balloons that chased the birds

[15]While students are not selected for their high levels of school performance, applicants with more than one failing grade are not admitted to the Turner Tech program.

away and, apparently, kept them from returning. Projects like these give academy students a common sense of purpose and a feeling of accomplishment in achieving a group objective.

Turner Tech has one of the strongest technical orientations among the New American High Schools. Through its integrated curriculum, all students are prepared for both further education and employment immediately after graduation. The rigorous nature of the technical curriculum is demonstrated by the large number of students who receive advanced standing in postsecondary education and training programs. For example, students who complete the Criminal Justice Program in the Public Service/Television Production Academy are considered for advanced placement when they apply to the Dade County Police Academy. All students who complete the masonry program in the Residential Construction Academy are given two grade levels of advanced standing in Dade County's union apprenticeship ladder.

Conclusions and Lessons Learned

Increasing students' motivation to stay in school and apply themselves is the key mechanism through which career- or theme-focused curricula help to raise academic achievement.

Throughout the New American High Schools, teachers and administrators observe that classroom lessons and work-based learning activities that are connected to students' interests generate greater student involvement and clear learning gains. Improved attendance, fewer discipline problems, and reduced dropout rates are three measurable indicators that demonstrate the concrete influence of career-focused learning and related education reforms. According to school administrators, teachers, and the students themselves, when students see the relevancy of their academic studies, they apply themselves and are able to excel even in difficult subjects like advanced mathematics and science, finance, and economics.

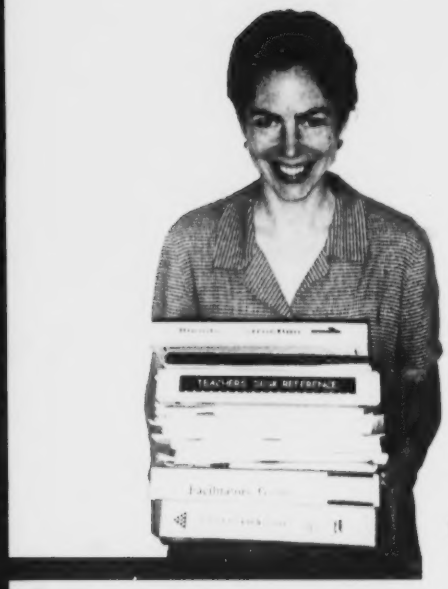
Teachers are a key part of the equation that connects curriculum to student performance. Collaborative lesson planning is an essential component of successful efforts to integrate curriculum across academic and vocational disciplines, but time for teacher collaboration is often lacking. Schools using theme-focused education often give high priority to teacher collaboration. They devote resources to ensuring that teachers can collaborate and plan lessons together to capitalize on their colleagues' strengths, interests, and experiences. In the New American High Schools, collaboration with colleagues helps teachers improve their teaching and create a better learning environment for their students.

These New American High Schools offer several important lessons to other high schools on choosing theme-focused education as a component of comprehensive education reform:

★ Theme-focused education is a natural way for smaller schools in large school districts to launch comprehensive school reform. These schools can attract students and teachers based on their shared interests. They can also develop solid, continuing connections with business or industry groups and provide students with real-life experiences that link classroom learning objectives with career goals. However, these benefits are not confined to small schools in populous school districts. Even large urban schools, like Turner Tech, and comprehensive high schools, like David Douglas, can use theme-focused education to enhance students' understanding of the relevance of their school experience.

★ A wide range of themes, industries, or career clusters can be effective vehicles for delivering a combined technical and college preparatory curriculum. A broadly defined industry focus—such as agricultural science at CHSAS—can be particularly beneficial as the foundation for a high-level, college-oriented program.

★ An industry or career focus is a natural way of including employers as partners in reform-based education efforts. Their participation, both on campus and off, can enhance motivation and commitment to learning for both students and teachers and create collaborations. Innovative interactive programs, like the Sanford I. Weill Institute at EFA, can be particularly effective. These programs help students sharpen their problem-solving and communications skills and help teachers keep abreast of new developments in their disciplines.



Promote Student Achievement by Enhancing Educators' Professional Development

Introduction

Most members of the reform-minded educational community now recognize that the full potential of reform efforts cannot be realized unless teachers become not only willing but also capable participants in the change process. What teachers need to support reform effectively has been the focus of much debate. As pressure on schools increases to produce high-achieving students, teachers occupy the limelight as the front-line deliverers of education (Cohen, 1996).

At the same time, the traditional methods of ensuring that inservice training for teachers meets the highest standards are receiving critical scrutiny. Many are convinced that these methods are no longer up to the task. Professional development activities for teachers have typically been limited to periodic workshops and lectures, and occasionally (often as a reward for high performance or leadership) a conference or two. Once the workshop or the conference is over, the teacher returns to his or her classroom supposedly equipped to introduce a new idea, pedagogy, or learning technique.

One problem is that there is little solid evidence that this kind of passive learning translates into different or improved instructional practice. Another problem is that when training is separated from the context of the teacher's school and classroom, most teachers are unable to practice what they have learned (Corcoran, 1995; Little, 1989; Guskey & Huberman, 1995).

Learning at conferences, workshops, and lectures tends to be passive, and when there is little or no follow-up, the evidence indicates that teachers have difficulty applying what they have learned to their instructional practices. When teachers are not full participants in choosing

and designing their own development activities, professional development activity is less likely to be relevant, and teachers are therefore even less likely to absorb and use new information (Hargreaves, 1995).

Schools such as the New American High Schools are discovering that what teachers are taught, how they are taught, and how they help decide what they and their students need are critical to the success of the comprehensive reform effort. As a group, these schools rely less on the old method of sending teachers to workshops and conferences and more on experiential approaches that are often classroom- and school-based. Instead of viewing teachers as autonomous individuals, these schools are working on building "communities of learners," in which teams of teachers work together to design their own development packages. These cross-disciplinary teams help to break down the barriers of disciplines, departments, and grades.

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Teachers working in schools undergoing comprehensive reform need abundant training, resources, and time, both at the onset of reform and well after changes have been implemented.

Unfortunately, even schools that recognize the importance of offering targeted, teacher-directed professional development opportunities sometimes fall into another trap, which can undermine progress in implementing reform. These schools may emphasize professional development and training at the start of the reform process, but slack off as reform gains momentum, demands on teachers' time mount, and school resources are depleted. Thus, when new practices are gaining a foothold in a school—and when it is most crucial that both new and veteran teachers are given the time and resources to apply new methods of teaching and communicating with each other—schools sometimes shift their resources and attention elsewhere. Several leaders in the New American High Schools have recognized this tendency and warn others against it.

Moving to a fully integrated curriculum requires schools to consider fresh, sustained approaches to professional development. Teachers need to be taught how to deliver integrated curriculum and need to be provided with support as new strategies are implemented.

Two of the New American High Schools have been leaders in making their professional development activity teacher-directed, rooted in the local context, relevant, and interactive. Their stories illustrate both the promise and importance of inservice training in comprehensive reform. The differences in the local contexts of these schools—William H. Turner Technical Arts High School, an inner-city magnet high school in Miami ("Turner Tech"), and Walhalla High School, a comprehensive school in

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rural South Carolina—underscore how new professional development approaches can be adapted to different situations.

William H. Turner Technical Arts High School

When Turner Tech opened its doors in 1993, the event marked the culmination of almost two decades of intensive planning and turned a community's dream into reality. Inspired by the ideas of William H. Turner, then a school administrator and now a Florida state senator, the architects of this school wanted to offer a new kind of education to the children of this economically depressed Miami community. The simple but deeply ambitious idea was to build a school that would provide both a rigorous academic curriculum and entry-level occupational skills training to prepare students for certification in a field. The "two-for-one" diploma Turner Tech students now receive by attending one of seven career academies was the result.

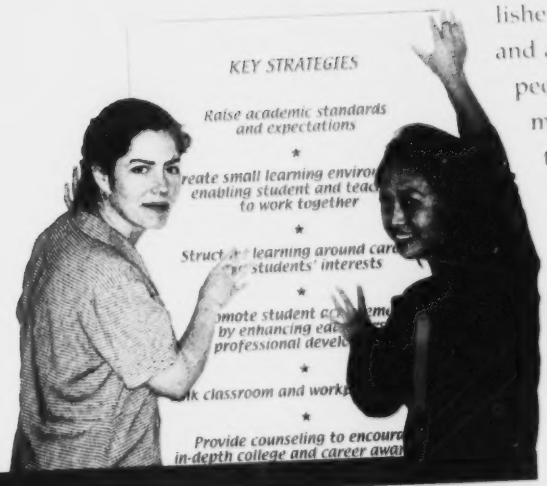
From the start, reformers knew that staffing this new kind of school with the right kind of teacher would be critical to its success. Unlike many schools that embark on comprehensive reform, Turner Tech had no history to undo, no staff to retrain, no reputation to change. Instead, from the very beginning, school planners had the luxury of starting from scratch and building the curriculum and the pedagogy they wanted on key education principles. These included a highly integrated curriculum, career-focused learning, abundant and well-connected workplace learning experiences, smaller learning environments, and alternative assessment techniques. The school's first principal hand-picked the first teachers, most of whom sought out Turner Tech because they too were passionate about the educational principles and practices being developed there. Staffed with teachers and administrators who shared the same vision, the school was fully operational from the start. But enthusiasm for change and a set of education principles are not substitutes for concrete knowledge of school reform. These teachers also needed a professional development effort to support the career academy structure, enhance continuous learning, and help them meet the needs of their inner-city students.

All of the classroom teachers, as well as the counselors, belong to one of the school's seven career academies and teach all of their classes there. Faculties within each academy form a cohesive team and are given autonomy in determining curriculum, setting standards, allocating resources, and running the day-to-day operations of each academy. Academy leaders, all of whom are vocational teachers, belong to the cross-academy leadership team.

Professional development and teacher-training activities are determined by each academy team. These teams meet regularly to determine their collective needs and ways to meet them. They then develop proposals describing their plans for their own professional development, which are reviewed by the principal. Three principles guide these decisions: whether the activity promotes teacher knowledge, whether it includes public performance of discipline mastery, and whether it promotes value beyond school. Teachers are held accountable for making progress in each of these areas and maintaining a portfolio documenting progress, based on student work.

Turner Tech leaders and staff are committed to an informal culture where teachers learn practices from each other and share what they have learned. Starting in 1999, a "job-shadowing" program was launched in which teachers followed and learned from each other as well as students during the school day.

Because of the heavy emphasis at Turner Tech on the integration of academic and vocational curriculum, much of the professional development work is tied to promoting effective integration. For example, teachers collaborate to develop and improve integrated curriculum units (or "ICUs"). ICUs are organized segments of instruction that link technical and academic competencies, drawn from the Secretary's Commission on Achieving Necessary Skills (SCANS) (established by former Secretary of Labor Elizabeth Dole in 1990), and address the social and emotional development of young people. ICUs are developed by teachers using six steps: (1) mapping (listing individual course standards and competencies and mapping by academy), (2) brainstorming (brainstorming topics, selecting one, developing themes and linking them to goals and objectives), (3) webbing (creating connections between themes), (4) planning (developing individual class activities and integrating activities across classrooms), (5) implementing (teaching ICUs), and (6) evaluating (assessing and documenting the ICUs).



Academy teams are given a choice about scheduling when they work on ICUs. Choices include off-site retreats, substitute-block-release time, early-release time, and after-school time. Each team is given "funding" in the form of nine units of substitute time and can allocate this time the way it wants. For example, one academy chose one retreat day and six blocks, while another chose three

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retreat days and no blocks (one retreat is worth three units, while a block is worth only one unit).

Both the content and process of teacher professional development at Turner Tech are driven and guided by the mission of this school. Students at Turner Tech are expected to enter the world of work with the skills and confidence that will allow them to be informed, effective, and productive citizens. Enormous dedication, resources, and time are needed to ensure that teachers' own development fuels and sustains the comprehensive reform that is integral to the success of achieving the school's mission.

Walhalla High School

Walhalla High School, a school of 825 students located in the foothills of Appalachia's Blue Ridge Mountains, originally instituted its reform effort to ensure that its graduates would be better prepared for the changing economy of the region. Since then, teachers have been full and active participants in the process of change. Walhalla teachers joined their principal, district staff, and business representatives in a group that attended the first of what was to be many conferences with the Southern Regional Education Board (SREB) High Schools That Work program in 1986. The group returned from that conference inspired and determined to embrace comprehensive reform. They began by dismantling the tracking system and launching Project Destination, a program to increase career awareness among students. From then on, teachers have been an integral part of decision making in this nationally acclaimed school.

Teachers at Walhalla High School are a highly educated and trained group of educators. All 50 are formally qualified to teach the subjects they have been assigned. Sixty-four percent hold master's degrees or above; three teachers are enrolled in doctoral programs. All mathematics, English, and science teachers have been trained in applied methodology, and all Advanced Placement teachers are certified as such.

From those early days of implementing reform, the principal and others learned that when teachers feel supported and can participate in the process, difficult and sometimes painful change can occur much more smoothly and rapidly. Walhalla chose the team approach to tackling the many challenges that lay ahead in their reform efforts. Teams of teachers and staff were set up to see that goals and objectives were set,

Although it is time consuming, involving teachers in designing and delivering their own professional development activity pays off.

put in place, and assessed. One of those teams is the still-functioning Staff Development Team.

The Staff Development Team, consisting of volunteers from the faculty, plans all professional inservice activities. To ensure that the activities are well aligned with the perceived needs of teachers, the team regularly surveys the faculty to get their ideas. The team tries to ensure that planned activities meet the requirements of key legislation, such as the South Carolina School-to-Work Act, the Educational Accountability Act, and National Goals 2000, as well as district and school goals. Each time a new reform is introduced, this team works to ensure that teachers are well prepared to embrace and promote it. For example, when Walhalla moved to a block schedule, the Staff Development Team designed an inservice package that taught cooperative learning techniques, approaches for coping with different learning styles, and applied methodology to help smooth the transition to the new block schedule.

In addition to organizing in-school workshops, based on needs identified by the teachers themselves, the Staff Development Team also encourages attendance at professional workshops and conferences, which are selected for their relevance to the work being done at the high school. Walhalla teachers are frequently seen at workshops and conferences sponsored by SREB, Tech Prep, the Partnership for Academic and Career Education (PACE), the regional school-to-work consortium at Tri-County Technical College, the South Carolina Department of Education, and the U.S. Department of Education.

The Staff Development Team is also responsible for ensuring that teachers are regularly exposed to a variety of workplaces. Walhalla High operates one of the most intensive teacher job-shadowing and internship programs in the country, despite the fact that the rural setting provides somewhat limited opportunities. Nonetheless, the school is so committed to key school-to-work principles that the lack of abundant employer partners does not deter the effort to expose as many teachers to as many workplace settings as possible. Following the logic that teachers cannot help students make the transition between school and careers without fully understanding what the modern workplace looks like, all 50 teachers are required to go on at least five organized tours to local businesses. These tours have been arranged by the Career Specialist and are usually scheduled during

the afternoon or evening hours. Teachers may select the industries they want to visit, and after these visits, they must develop a lesson plan that incorporates what they have learned from the tours.

Walhalla teachers also participate in highly intensive internships, which are arranged by PACE. These two-week summer courses are designed to immerse teachers in a "real job" for four days, followed by one day in the classroom. Every teacher and administrator at Walhalla is expected to take these courses or similar ones. Some Walhalla teachers take a graduate-level course designed for teachers at Clemson University that provides them with a broader and more systematic exposure to a variety of industries and occupations. The course includes tours of area businesses and seminars on a variety of topics conducted by business representatives. Teachers must design a project that integrates their new knowledge about an industry into classroom curriculum.

How much of the impressive gains in student achievement and post-graduation outcomes can be attributed to the teacher-driven and school-to-work-based approach at Walhalla is hard to say.[16] The faculty of Walhalla High are a cohesive, dedicated group of teachers, most of whom have worked at the school for many years. Having a large percentage of veteran teachers can sometimes be a barrier when a school tries to reform because such teachers are often reluctant to change or try new approaches, but this obstacle was removed by giving teachers responsibility for their own training and closely tying professional development work to the mission and objectives of the school. Without the full backing of the teachers, combined with solid administrative support for their choices, it is hard to imagine how the steady gains in student achievement could have occurred.

[16]However, trends such as a decreased dropout rate over a 9-year period; an increased percentage of seniors completing career preparation requirements (from 21 percent to 81 percent over a 5-year period); and a steady increase of graduates entering postsecondary institutions (from 51 percent to 65 percent over a 5-year period) suggest that these reforms are having a positive influence on student outcomes.

Conclusions and Lessons Learned

A growing number of studies have documented that inservice teacher training is most effective when it is planned and designed by teachers themselves; when it is closely related to a school's mission and purpose; when it is relevant, monitored, and hands-on; and when school leadership is supportive of teachers being more proactive in designing and being held responsible for their own professional development. The New American High Schools as a group have worked to support teachers as full participants in the reform process. Two stand out as leaders in this area: Turner Tech and Walhalla High School. There are a number of lessons to be learned from these and the other New American High Schools that use the strategy of professional development as a tool to enhance student achievement. They include the following:

★ Although time consuming, involving teachers in designing and delivering their own professional development activity pays off.

★ Teachers working in schools undergoing comprehensive reform need abundant training, resources, and time, both at the onset of reform and well after changes have been implemented.

★ Teachers learn effectively from each other, but need the time and the structure to get the most out of peer learning.

★ Attending conferences and workshops is often a passive experience and does not always result in more effective classroom practices; however, some schools rely on workshops and conferences if the content is closely tied to the mission and efforts occurring at the school.

★ Exposing teachers to workplaces is an effective strategy to support integrated curriculum, especially when it is an intensive and varied experience, with a requirement to use the knowledge gained in the classroom.

Link Classroom and Workplace Learning

Introduction

For most citizens, expectations about work and careers have changed dramatically in the past couple of decades. These changes are reshaping both sides of the employment relationship. In virtually every industry, employers are counting on more from the people they hire. They demand more advanced technical, problem-solving, and analytical skills; leadership and teamwork abilities; and—even from entry-level workers—substantive knowledge about their industry and line of work. Frequently, employers are finding that their expectations are not being met. Many workers are entering the work force without the high-level skills that are so important in this new job market.

For their part, employees also have a new set of expectations. They are learning that a person may hold many jobs during a lifetime. They are recognizing that continuously honing the right set of academic and technical skills—combined with relevant knowledge about the world of work—is essential for navigating this new career highway.

Schools have been charged with preparing students to meet these personal career challenges and the tougher demands of the labor market. Educators are responding to this new mandate. Many are enhancing the school curriculum by infusing academic subjects with real-life applications drawn from the world of work, while also challenging students with higher academic standards. They are also helping students develop work readiness skills and creating opportunities for them to sharpen their academic and technical skills through activities that occur in the workplace. These often include community service assignments, internships, and paid employment. Most importantly, some educators are seeking to connect these in-school and outside efforts. Using an integrated set of classroom and work-based learning activities, teachers are addressing key learning objectives by empha-

sizing them over longer periods during the school year and focusing on them in several activities.

A hallmark of the New American High Schools is their diverse and creative repertoire of well-coordinated in-school and outside learning strategies. For these schools, work-based learning is not simply an add-on that contributes minimally to students' educational experience. While these schools are using several different approaches, they are pursuing a common set of objectives. This section of the report accomplishes several things. It identifies these objectives; describes the way the New American High Schools are meeting them by connecting out-of-school learning experiences to classroom studies; demonstrates the common elements in various approaches; and shows with two examples—the New York High School of Economics and Finance in New York City and David Douglas High School in Portland, Oregon—how individual approaches are tailored to the missions of particular high schools.

The Changing Place of Work in the Lives of High School Students

For nearly a decade, the world of work has been taking on renewed importance in the lives of students both inside and outside of school. Some of this new emphasis on work and careers reflects a deliberate concern for students' academic and technical development, especially as teachers have implemented new types of classroom practices. However, until recently, the other side of the picture—student involvement in the labor market—has not been part of the structured learning process.

In the classroom, teachers have responded to both research and legislation by creating new connections between school and careers. They are putting into practice lessons drawn from research on the benefits of applied learning by using work and careers as a context for communicating academic learning objectives (Resnick, 1987; Nielsen-Andrew & Grubb, 1992). They have also responded to the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 (Perkins Act) by including integrated academic and technical/vocational instruction, work-readiness competencies, and work-based learning in the curriculum. In just a few short years, the effect of this research and legislation on the curriculum has been impressive. In 1996, 45 percent of U.S. high schools claimed to be pursuing some form of integrating

academic and vocational curriculum; 57 percent offered instruction in workplace competencies; and 20 to 28 percent used skill standards, skill certificates, and occupational certificates as vehicles for communicating and certifying vocational/technical competencies (Visher, Lauen, Merola, & Medrich, 1998).

At the same time, paid employment—after school, on weekends, and in the summer—has become one of the most important outside activities for growing numbers of students. In a 1996 survey of 2,200 high school seniors in 32 school-to-work partnerships in eight states, conducted for the National Evaluation of School-to-Work Implementation, 88 percent of the seniors indicated that they had worked at a paid job at some time. Sixty-nine percent indicated that they had worked for pay during their senior year alone. For today's student employees, work is much more than an occasional diversion. In the National Evaluation of School-to-Work Implementation Student Survey, nearly 60 percent of students who held jobs during the school year worked for more than 16 hours per week (Hershey, Hudis, Silverberg, & Haimson, 1997, pp. 117–118).

While student jobs have always been an important source of income for students from poor families and a major source of lifestyle support for those from more comfortable economic circumstances, traditionally, these jobs were almost totally disconnected from students' academic experiences. Most still are. Students find after-school and weekend jobs on their own, most often in retail sales or fast food restaurants. These positions are rarely connected to students' longer-term career interests or their classroom studies (Haimson, Howell, Myers, & Peterson, 1997).

Using Work as a Vehicle for Learning

Teachers have always known that many of their students work, but using students' paid or unpaid employment experiences to enhance classroom learning has not been a common practice. Cooperative (co-op) education was one of the few exceptions that did connect students' classroom studies to their paid employment, but even in co-op assignments, there were few links between students' work experiences and their academic subjects (Barton, 1996).

The role of work and workplace activities in the curriculum is changing. It is becoming less of a satellite circling outside the world of education

and more of a central component in the high school curriculum. Many of the New American High Schools are explicitly linking classroom activities and learning objectives to students' workplace activities and giving teachers and other school staff responsibility for making the connection a meaningful one. In the best of these applications, teachers are using career-focused education—through academy programs or career majors—as the vehicle for coordinating classroom and workplace learning and helping students achieve higher academic standards.

Although these connected classroom and workplace learning activities take several forms, educators at the New American High Schools are using them to achieve a shared set of objectives, including the following:

- making academic subjects more relevant to students,
- improving student motivation to work hard and stay in school,
- exposing students to the most up-to-date workplace applications of technical and academic concepts,
- helping teachers develop livelier, more relevant curricula, and
- contributing to career exposure and expanded career development efforts.

Strategies for Linking the Classroom and the Workplace

Strategies for linking school-based and workplace learning have clear implications for education. At various New American High Schools, leaders have reshaped school structure and organization, curriculum, pedagogy, teacher professional development, and the roles of outsiders—such as employers and community groups—in the education process. They have made these changes, in part, to enhance learning and improve student achievement through meaningful connections between students' in-school and outside experiences. Their strategies include the following:

- creating an entire school or a curriculum structure, such as a school-within-a-school or a comprehensive set of career majors, that uses an industry or a set of career clusters as the focus for connected classroom and workplace activities,

- using alternative assessment methods that meet dual goals: improving the student evaluation process and fostering cognitive development,

- establishing partnerships with employers to offer internships and job-shadowing opportunities for teachers that help them stay up-to-date with technical material and workplace applications that are relevant to their disciplines and can be used in the classroom,

- expanding the advisory role that many employers have played in vocational/technical programs to include broader involvement in designing academic and vocational curricula and assessments,

- requiring all students to complete a progressive sequence of workplace activities that have a set of developmental learning goals and fit in with classroom instruction, and

- organizing curricula for career majors around projects that combine academic and technical learning objectives with real-life business applications.

Every New American High School has been connecting in-school and outside learning activities. The following sections describe how two of these schools have made integrated classroom and workplace learning activities central to their students' educational experiences and their teachers' pedagogy. The discussion focuses on how these schools have created this connected learning process and how it has motivated their students to high achievement.

High School of Economics and Finance

There are few schools in the nation more committed to delivering a career-focused education and are better situated for that mission than New York's High School of Economics and Finance (EFA). Located in a high-rise building on Wall Street since 1990, EFA has relied on exceptional support from the financial services industry and the glamour of "the street" to show a highly diverse group of about 670 students the rewards of hard work and high achievement.

EFA's curriculum is built on a highly successful model that was established in 1982 by Sanford I. Weill of the Traveler's Inc., through a partnership between the New York City Board of Education and corporations in the financial services industry. The curriculum includes a rigorous set of core academic and finance courses, designed to meet New York's standards for state university entrance and the prestigious Regents' diploma. The school is founded on the principle of giving every student extensive opportunities for interaction with members of the surrounding financial community through an integrated set of classroom and work-based learning experiences.

Many different elements directly connect classroom learning to outside activities. In some instances, the link is serial, through classroom and workplace activities that alternate during the four years that a student attends EFA. That is, students initially develop a set of skills in the classroom and subsequently apply them in the workplace. For example, all EFA students begin to develop a comprehensive set of work-readiness skills through classroom activities in required courses. After completing the courses, they apply these skills in an advancing series of three unpaid and paid internships. Each experience requires a higher skill level than the previous one.

In other ways, the linkages between classroom learning and workplace applications are concurrent. For example, students apply the skills they are currently developing in a finance course to problem-solving activities and other work-related assignments involving local finance professionals. Both types of connections between classroom

and outside learning produce a mutual reinforcement of learning objectives that helps students acquire high-level academic and technical skills.

Work-Readiness Seminars Lead to a Progression of Workplace Activities

All students at EFA must participate in a series of three extended paid and unpaid internships organized along a ladder of increasing skill requirements. These include a community service assignment and two internships with New York City service agencies, foundations, and Wall Street firms.

Before these internships though, freshmen are required to complete the 16-week New Horizons Job Skills course, which teaches work-readiness skills, such as interviewing techniques, resume writing, professional etiquette, and job application skills. After mastering the work-readiness courses, students apply these skills in the workplace through a 120-hour community service project in a New York City public service agency, such as the New York Housing Authority or a non-profit organization, such as the Make-a-Wish Foundation. Looking back on these experiences, many students make a direct connection between the skills they learned in New Horizons and the demands of their later community service projects and internships. These activities are often students' first assignments in the real world of work, and success depends on their developing work-readiness skills first in a classroom setting.

After completing the community service project, students participate in phase two—an unpaid, 120-hour work-based learning experience with a firm in the financial district. Here, students gain more in-depth understanding of how organizations function, learn higher order problem-solving and communications skills, and begin to apply the knowledge of finance and economics they are acquiring in the classroom. Students are graded on their internship experiences, and in order to pass, they must receive a positive evaluation and letter of recommendation and complete a diary and written report.

Students earn the opportunity to participate in the third phase—a 240-hour paid internship—when they have achieved several milestones. They must complete the community service and unpaid internships with positive evaluations, receive a letter of recommendation, have no course failures in the term prior to the internship, and display an

At the New American High Schools, integration means coordinating learning activities across academic and vocational subjects, connecting classroom and outside learning experiences, and articulating curriculum across grades.

exemplary attendance record. Most students complete this internship during the summer between their junior and senior years. They work in Wall Street firms such as Oppenheimer Capital or Lehman Brothers with brokers, bankers, and financial analysts. Their excellent attendance and enthusiasm for the internships are strong evidence of their classroom learning and motivation to succeed.

For students who do not participate in the paid internship—some failed to meet the stringent participation requirements—the school offers a school-based experience program known as Virtual Enterprise, adapted from a European school-to-work initiative that has been operating for more than 10 years. It is a simulated business in which several New York City schools, and many in Europe, participate as different functional units of the business. EFA's part of this international business, known as Senior Investors, sells the services of student financial advisors who can invest the pension and other funds of the "employees" in other schools. Running their part of the business requires EFA students to use a wide range of academic and technical skills and knowledge ranging from mathematics and communications to business management, economics, and finance.

Seminars with Finance Professionals Apply Classroom Learning

Students participate in a second type of integrated academic and workplace experience—albeit a simulated one—by enrolling in seminars at the Sanford I. Weill Institute. Every Wednesday afternoon, they meet with volunteers from local financial firms and other businesses in seminars on subjects such as "The International Marketplace" and "Accounting: The Nervous System of a Company." These weekly two-hour seminars typically run for an eight-week period. Many seminars include field trips that expose students to the fields of insurance, banking, and real estate. Students earn four credits per year for attending the Institute's seminars, and assignments include keeping a journal and completing project-based activities. Students use the seminars to learn about various careers and apply the financial concepts they have learned in class to business problems. Exchanges between students and finance professionals provide an opportunity to use classroom learning to solve real-life business problems.

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One of the most impressive aspects of the integrated classroom and outside learning experiences at EFA is the well-defined developmental ladder that students climb between the 9th and 12th grades. Each step leads toward the program's twin goals of preparing students for postsecondary education and introducing them to broad career opportunities in the financial services industry. Economics and finance courses give students the analytic tools to solve complex financial problems. By participating in seminars at the Weill Institute, they see how successful finance professionals use these skills in their jobs. Educators at EFA are fortunate: they are able to connect the classroom and outside parts of the curriculum successfully by capitalizing on their strong partnership with the financial services industry and using that support to help both students and teachers.

David Douglas High School

Small schools like EFA—as well as Fenway High School in Boston—have worked hard to create relationships with industry partners who provide intensive workplace learning experiences for all students. At larger comprehensive high schools, especially in rural and semi-rural communities, it can be more difficult for school administrators to create significant workplace learning opportunities, such as internships, for several hundred students each year. This is especially problematic when educators want students to have workplace assignments that fully support teachers' academic learning objectives and not just a period of days or weeks when students observe the comings and goings of workers on the job.

A comprehensive school with more than 1,800 students, David Douglas High School in Portland, Oregon, faced this problem, and it could have derailed the school's commitment to giving all students a significant career-focused learning experience. The management burden on school administrators and teachers was too great, and the required number of placements simply were not there. However, leaders at David Douglas did not abandon their goal of integrating work-based learning with the academic and technical curriculum. Teachers at David Douglas have made creative use of in-school activities to supplement opportunities in the workplace. They have created a set of project-based activities and student-run enterprises that take place on campus, involve large numbers of students, integrate classroom studies with business applications, and motivate students to plan their high school curriculum around a focused set of goals for further education and a career.

Projects and Student Enterprises Connect with Career Majors

Career majors became the foundation of the curriculum at David Douglas in 1991. This restructuring of the classroom experience has evolved from a concept, to a goal for all students, to a reality. The high school is known as a leader in Oregon's statewide effort to involve all students in a career-focused curriculum.

During the 9th and 10th grades, students prepare for selecting a career major by participating in two career exposure classes. In the 9th grade, students are required to take PACE I, which includes a variety of self-assessment activities, occupational research activities, and business tours. Tenth-grade students in PACE II learn about the high school's career major areas, and many participate in job shadows that help them decide on a career major focus. Beginning in 11th grade, every student enrolls in one of seven career majors. The first six—arts and communications, business and management, health sciences, human and social services, industrial and engineering systems, and natural resources—are the same as the state's six career clusters.[17] The seventh—hospitality, tourism, and recreation—is the school's response to the employment needs of the robust tourism industry in the Portland area.

Students in each of the career majors have opportunities during their junior and senior years to apply their classroom learning to intensive work-related assignments. For example, students in the Natural Resources career major have built a trout stream and pond on the David Douglas campus that is supporting the entire life cycle of a trout-raising business. Teachers who offer classes in this career major have used the trout business as the basis for lesson plans in several different disciplines. At the same time, students working in the business have developed their own curriculum materials and are using them to teach an aquatic biology unit to local elementary school students.

For students in the business and management major, career-focused learning follows a clear developmental skills ladder of coordinated classroom and outside activities. Students start by participating in running the student store during their junior year and move up to store management in their senior year. Senior-year internships in the business

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[17] Like other states, Oregon used an extensive statewide collaborative process to identify labor market needs and establish this set of recommended career major areas.

community then allow students to apply their advancing academic and technical skills in mathematics, communications, business management, and accounting. By the time they graduate from David Douglas, business and management students have completed a progression of work-based activities that helps them build an integrated set of academic, technical, and employment skills.

Year-long projects in several of the career majors also help David Douglas students integrate their classroom and work-based learning. This is another way that a large comprehensive high school can include significant numbers of students in an intensive career-focused learning experience. Some of the most successful, challenging, and motivating projects have emerged from the Industrial and Engineering (IES) career major. In 1995–96, students in IES decided to design and build an electric race car and compete in Portland's "General Electric Electron Run." Students interested in engineering developed computer-aided design (CAD) blueprints for the car. Those interested in business operations were responsible for fundraising and establishing relationships with business partners. Students with an interest in graphic design developed a logo and brochure for the project.

This project demonstrates the integration among academic skills, technical competencies, and business applications. The car designers were using both mathematics and automated drafting skills; the business managers employed the best of their management and communications skills; and the brochure designers were composing persuasive text while developing their computer graphics skills. According to the students themselves, the best part of the project was seeing the final product and recognizing the contribution that everyone on the team had made. One of the instructors said that even students who previously saw little value in learning mathematics were enticed into using principles of geometry and trigonometry to complete their project.

The following year the IES program searched for another project that would generate the same enthusiasm as the car-building experience, and they were successful in doing so. Students built a small rail system to transport students and staff, especially those with disabilities, around the large David Douglas campus. With help from local professional engineers, they are also building a train that will run on the track. Through this effort, students developed teamwork and problem-solving skills, improved their oral and written communication skills

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Integrated activities can be as important for teachers' continuing professional development as for their students.

and academic knowledge (especially in mathematics and physics), and accomplished all of this by addressing a real school need.

These integrated projects have clear professional development benefits for teachers as well. Instructors indicate that their projects bring them into contact with other teachers inside and outside of their departments and give them a valuable opportunity to interact with outside professionals working in their own and related fields. They are able to keep abreast of new developments in their fields and use that information in both their project-based and other courses.

The experiences of the New American High Schools demonstrate that there are many benefits associated with integrated classroom and workplace activities. But, there are challenges as well. Integrating the curriculum across disciplines and nurturing connections with outside business partners require joint planning, coordination of lesson plans, and communication at many different levels. Teachers at many of the New American High Schools were quick to point out the importance of scheduling planning time for these collaborative efforts, whether it occurred on campus or during off-site meetings, retreats, and workshops. They indicated that effective integration can suffer when planning opportunities are reduced or eliminated, particularly as programs start to mature and resources are deployed elsewhere.

Conclusions and Lessons Learned

Across the nation, many schools are using work-based learning in the classroom or encouraging students to participate in outside activities that bring them closer to work and career opportunities. Because it is so much harder to do, fewer schools have been able to connect these two efforts (Hershey, Silverberg, Haimson, & Hudis, 1999). The New American High Schools are models of innovation and success when it comes to integrating classroom and outside activities through career-focused education. Their experience offers some important lessons for other schools. These include the following:

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★ One approach does not fit all. Differences in school size, context, and mission have important ramifications for the feasibility and appropriateness of various integrated classroom and workplace learning experiences. For example, small schools, academies with a single career focus, and ones with highly involved business partners may have a real advantage when it comes to creating intensive outside workplace activities for all students. Larger comprehensive high schools may have to turn to a broader combination of activities inside and outside of school to give students needed exposure to work and careers. However, even when these experiences take place on campus—such as seminars with finance professionals at the Weill Institute or year-long career major projects at David Douglas—they can support some of the most important objectives of work-based learning: developing teamwork, communication, and problem-solving skills and giving students an opportunity to apply high-level academic concepts.

★ Integration has several different and important meanings when it comes to improving students' learning experiences. At the New American High Schools, integration means coordinating learning activities across academic and vocational subjects, connecting classroom and outside learning activities, and creating curriculum linkages across grades. By connecting curricula inside and outside of school and across grades and disciplines, these educators are creating ever more meaningful developmental learning experiences for students throughout the high school years.

★ Integrated activities can be as important for teachers' continuing professional development as for their students. EFA and David Douglas are excellent examples of how teachers are educated and energized by their contacts with outside business professionals and how they use these professional development opportunities to improve their classroom instruction.

★ Integration between classroom and outside learning activities—especially when it is part of a developmental sequence—requires a high level of coordination among teachers and business partners. To make this multifaceted integration work, schools should build planning and meeting time into teachers' schedules and recognize that these activities remain important well into the implementation stage.

Provide Counseling to Encourage In-Depth College and Career Awareness

Introduction

High school reformers view high-quality and intensive counseling as crucial to whole-school reform efforts. Rather than treating counseling services as a luxury, more and more reform-minded high schools place career and college guidance activities at the core of their program, even building it into curriculum.

The impetus for high school officials to rethink the way counseling services should be provided comes from several sources. For some inner-city schools, it is the recognition that increasingly students receive too little support and guidance from home. Troubled students often have no one else to turn to but their counselors and teachers for everything from emotional support to information about college and careers. Yet even in schools located in more affluent communities, parents cannot easily keep up with new developments in education, training, and career opportunities. In large high schools where enrollments exceed 1,000, traditional methods of delivering counseling services no longer work. Small counseling staffs struggle to cope with caseloads in the hundreds and are asked to take on more and more responsibilities. Many who argue for intensive career-focused counseling are attracted to the school-to-work movement and its emphasis on increasing students' awareness of their career options at younger and younger ages. Schools are depending on counseling departments as one of the key links in providing these kinds of experiences and information.

Research on access to counseling and its effects validates claims of high school reformers who see counseling as an integral building block for successful reform. Studies on the availability and effectiveness of counseling consistently show that counseling matters, both for the academic success of students while they are in school and for how well they fare after they leave school (Lee & Ekstrom, 1987; Hotchkiss & Vetter, 1987). Despite strong empirical evidence that access to quality counseling

counts, studies continue to report that too few students have adequate access to counseling services, including career and college information. The primary reason for this inadequacy is that counselors tend to be stretched too thinly, spending the majority of their time on a minority of students with multiple needs and burdened with an ever-increasing load of noncounseling roles and responsibilities (Pauly, Kopp, & Haimson, 1995; Chapman, O'Brien, & DeMasi, 1987). Also, school administrators often give higher priority to functions other than counseling services in their resource allocation decisions.

The New American High Schools are an exception to this pattern. As a group, these schools place counseling and career awareness activities near the top of their list of priorities. Each of them is experimenting with different ways to broaden the concept of counseling, increase all students' access to counseling services, and improve the quality of services offered.

A Spectrum of Strategies

The New American High Schools give counseling and career awareness top priority in their reform efforts and have used a range of strategies including the following:

- assigning counselors to smaller schools-within-schools, houses, or academies to reduce their case load and give them a chance to get to know their students and teacher colleagues better,
- diffusing counseling functions throughout the school by strengthening teachers' mentoring or advising roles so that they may become "counselor-teachers,"
- taking advantage of technology to facilitate assessment of skills and interests and to promote career and college awareness,
- using school-to-work ideas to expose students to work and careers through activities such as internships, job shadowing, visits from business representatives to the school, and job fairs,
- linking coursework to career-awareness activities,
- requiring courses designed to increase career awareness, and

- creating and linking career awareness activities between elementary, middle, and high school levels.

Two New American High Schools Put Counseling at the Center of Reform

The two New American High School sites highlighted here were selected because they have placed counseling and career and college awareness at the very center of their reform efforts, even allowing these activities to drive many of the other restructuring and innovative practices under way in the schools. In both of these sites, the primary impetus for launching new approaches to raising students' awareness about their postsecondary choices was the alarming recognition that large percentages of graduating seniors had no idea what they were going to do after graduation. Both Walhalla High School in Walhalla, South Carolina and the Thompson School District in Loveland, Colorado are using innovative and effective counseling approaches.

Walhalla High School

Increasing career awareness and preparation for college among students has always been the engine driving reform practices at Walhalla High. "The more that I became involved [in the reform movement]," recalls John Hostetler, the principal of Walhalla, "the more I realized that what we needed to do was to look at [reform] from a school wide perspective. . . . That's when we started to look at career counseling, applied academics, and contextual learning."

Walhalla High was one of four high schools participating in a districtwide effort beginning in the mid-1980s to bring more in-depth counseling and career awareness to students. It began when the local business community contacted the school. Employers were unhappy with the caliber of the students hired after high school. They contacted the district and high school officials to see what the community could do to better prepare their future employees for work. The employers' concerns resonated with school leaders' worries: only a minority of graduating seniors had any idea what they would be doing after high school. In 1987, with the backing of the local business community, the Walhalla School District launched Project Destination, a comprehensive kindergarten through 12th-grade program designed to get students thinking about careers and college early and keep them focused on their

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Broadening the counseling function to include a wide range of career-awareness activities improves students' access to information and focuses their attention on the importance of career planning.

options and interests throughout middle and high school. Project Destination was a home-grown project, designed and overseen by Walhalla High faculty and administrators, district officials, and elementary, middle, and high school guidance counselors, with some assistance from Clemson University and Tri-County Technical College. Key to the success of Project Destination was the creation of the career specialist position at Walhalla High.

Walhalla High pays careful attention to aligning programs and activities between the elementary, middle, and high schools so that students experience a well-coordinated system of services and activities, each building on the work done in the grades below. The career portfolio, a collection of materials, instruments, test results, and plans developed for each student from 6th grade through high school, serves to link and keep track of activities and decisions that are made as the student moves from grade to grade.

Every middle and high school in the county has, in addition to guidance counselors, its own career specialist who ensures that all students focus on the importance of career and postsecondary educational planning. Career specialists organize a wide variety of events and activities designed to enhance career awareness and get students interested in pursuing one or more career interests. The career specialist meets with each 8th grader and his or her parents to talk to them about career options and curriculum. Students take interest inventories, listen to class presentations, watch videos, attend guest speaker events, go on field trips to places of work, attend career fairs, and visit Tri-County Technical College. All 8th graders receive their own copy of "Career Bound," a booklet containing information about courses and career majors at Walhalla High. Toward the end of the 8th grade, each student meets with the career specialist again to select either the tech-prep, college preparatory, or dual path; choose one of the five career majors; and work out a plan of courses to take. Students' career portfolios are then sent to the career specialist at the high school.

Once in high school, students are expected to focus more and more on their career goals and interests. They regularly visit with the career specialist and two academic counselors to discuss their progress, select courses for the following year, and adjust or revise their plans to reflect changing interests. Students are also taught how to prepare for a job

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search. The career specialist conducts workshops on how to apply for jobs, interview effectively, and write resumes.

In addition to the abundant one-on-one attention students receive from the career specialist and the other counselors, students receive a steady stream of information about careers and occupations through a collaborative arrangement the school has with the Hamilton Career Center (HCC). HCC is a local vocational educational center that serves as a kind of area vocational school. About half of the Walhalla High students take vocational courses at HCC. Every day nearly one-quarter of Walhalla's 850 students board the bus (an exodus made possible by the block schedule) for the ride over to HCC, where they take advanced courses for both high school and college credit. Working closely with counselors at Walhalla High, HCC's staff has introduced career exploratory classes into their curriculum, complementing the work done on career awareness by the high school. These courses allow 9th and 10th graders to sample four different HCC programs by attending the center for half days on alternate days. The HCC counselor also goes to Walhalla to meet with 10th graders to work with them on their career plans and courses. Finally, the center hosts an annual career fair for all 10th graders in the district.

Another key feature of Walhalla's counseling program is an innovative teacher advisement program called positive academic counseling for students (PACS). Through this program, teachers work with the same small group of 20 students, meet with them bimonthly throughout high school, offer academic counseling, and assist students in selecting courses and revising their career portfolios. Teachers maintain a portfolio on each student in their PACS Group, including biographical information, standardized test results, and midterm and nine-week report cards.[18]

The intense and varied counseling program at Walhalla is paying off in many ways. At the beginning of the reform efforts in 1987, only one-fourth of Walhalla students were planning to attend four-year colleges; less than 20 percent were planning to enroll in vocational programs; and

[18]PACS Parent Day is held every spring with each parent or guardian scheduled for a conference to review the career portfolio. In 1998–99, 72 percent of the parents attended conferences. On PACS Parent Day, booths are also set up with representatives from local two- and four-year colleges, the Hamilton Career Center, financial aid organizations, NCAA Clearinghouse Information, and Walhalla High.

the rest had no idea what they would do after graduation. By 1998, virtually all of the students stated that they planned to continue their education. Thirty-four percent of graduating seniors planned to attend four-year college; 31 percent planned to attend two-year college; and 2 percent were planning to attend a training program.[19] Many students take the SATs at Walhalla: Fifty-six percent of the students took the SAT in 1996–97 (compared with a national rate of 41 percent), and the average scores are steadily climbing. According to a follow-up survey of graduated seniors, a large number, 71 percent, are working or studying in the career cluster they specialized in during high school.

Thompson School District

The Thompson School District, serving the two towns of Loveland and Berthoud in a mixed suburban-rural area about one hour north of Denver, has also placed career development and career awareness programs at the center of its comprehensive school-to-work reform effort. Counseling, in a broad sense, is the foundation on which most of the reform practices for which this district has attracted national attention are built. Just as it was for Walhalla, reform efforts that began in the late 1980s were prompted by the discovery that students graduating from the high schools in the Thompson School District were ill-prepared for choosing and succeeding in a career. In one survey, former graduates were asked to respond to a number of questions about how they made their career decisions. When asked if their high school education prepared them well for their post-graduation pursuits, 70 percent of those in the general track said no. Those specializing in a vocational area were far more positive about their high school experience. When asked to indicate which factors were major problems in obtaining work after high school, more than half of all former students answered "deciding what I wanted to do." When asked what the high school could have done to better prepare them for the future, the largest group indicated that the high school could have given them "more career exploration opportunities, more guest speakers to talk about occupations, more opportunities for on-the-job training, and more career exploratory courses." Matters had not improved by the early 1990s. A survey

[19]Career counseling and an excellent working relationship with the area vocational center also resulted in greater use of the center by students. An average of 45–50 percent of the student body has taken courses each year at the center over the last three years.

showed that only one out of four seniors in another Thompson graduating class had any idea what they would be doing the following fall.

Career awareness and counseling programs deliver a strong message to students that it is never too early to think about postsecondary plans.

Armed with these facts, district officials approached the school board urging them to adopt a radically new approach for educating the community's children. Inspired (and funded) by the School-to-Work Opportunities Act, the entire district—including 18 elementary schools, four middle schools, three comprehensive high schools, and one alternative high school—has since been moving to a standards-based, career pathway system in which intensive career guidance and counseling play a key role. Like the district in which Walhalla High School is located, reformers decided to build intensive career awareness activity all the way down to the elementary school level and to synchronize activities and planning among all schools in the district.

The District spent considerable time selecting a tool or method to deliver its counseling services. After considerable research, including visiting other schools and districts, Thompson District chose to use the ACT Discover program, developed around the work of researcher John Holland and others, as the basic structure for its career pathways and career counseling model. The six pathways that were chosen match those in the ACT computerized program: arts and communications; business operations; marketing, management, and recordkeeping; technical, mechanical, natural resources, and crafts; research, engineering, science, and medical services; and social, health, education, and personal services.

The ACT Discover program provides computer-accessible interest inventories, information on specific occupations within each pathway, including education requirements, employment opportunities, and current pay ranges. With the help of the ACT program and a counselor, each 9th grader creates a career and academic plan (CAP). The CAP, revisited often during the four years of high school, serves as a guide to help students select courses and work-based learning experiences that prepare them for their selected career area. Each school has a staff of career counselors, one for each grade level and separate from academic counselors, who work with students and their CAPs.

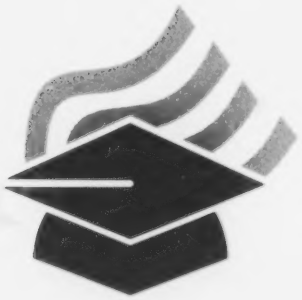
In Thompson Valley High, networked computers in most classrooms now make access to the ACT Discover program easy for teachers and students, but students may also use the well-equipped resource center

for all of their counseling needs. Career counselors, academic counselors, and the school-to-work coordinators all have offices at the school, and there is abundant information, computerized and otherwise, ready for students to use.

The district has made the most of its ties to the employers in the Loveland area to create high-quality work experiences, paid or unpaid, to "every student who wants one." Each school has a paid school-to-work coordinator who works to create and expand these relationships with employers. Quality internships are offered with a number of employers in the area, including Hewlett-Packard and McKee Medical Center. And unlike the situation in many schools, it is not just a handful of students who participate in internships. About 50 percent of all graduating seniors have had at least one internship experience by the time they graduate, and many have had several. In addition, one of the high schools offers apprenticeships through a program started in cooperation with the Department of Labor in 1997. Job shadowing, formerly an unusual event according to the principal of another high school, has now become routine, as have career fairs, visits to and from businesses, and a host of other activities designed to keep careers in focus throughout high school.

Seniors graduating from the Thompson District high schools are now much better informed about career choices than were their predecessors before the career awareness reform began almost a decade ago. More students are going on to postsecondary education, particularly two-year colleges. And in one of the three high schools, the percentage of students who do not know what they will be doing in the fall after they graduate has steadily declined, from 25 percent in 1994, to 2 percent in 1995, to .03 percent in 1996, and zero in 1997.

Conclusions and Lessons Learned



Research provides increasing evidence that (1) quality career counseling and guidance matter in many ways, including helping students make informed choices about careers and motivating them to do their best in school and (2) too many students have traditionally received too little counseling due to limited access to counselors and services. Two New American High Schools have demonstrated how the problems in providing students with access to high-quality guidance and career information can be overcome, turning counseling, coupled with other reforms, into a powerful tool to improve student outcomes. The examples of Walhalla High and the Thompson School District show that:

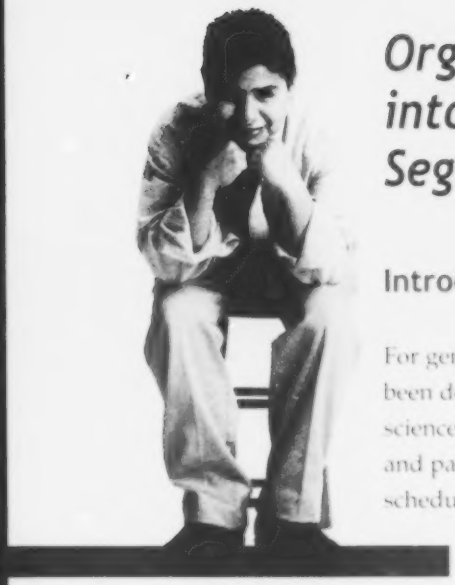
- ★ Broadening the counseling function to include a wide range of career-awareness activities—such as job shadowing, work-based learning experiences, and career exploration classes—improves students' access to information and focuses their attention on the importance of career planning.

- ★ The use of technology to enhance and give structure to the counseling program, especially when combined with a career pathway system, is an effective and efficient way to help students make informed choices about their schooling and careers.

- ★ A comprehensive, fully articulated districtwide career awareness and counseling program not only is feasible but also delivers a strong message to students that it is never too early to think about postsecondary plans.

- ★ Diffusing the counseling function to create teacher-advisors and integrating career awareness activities with curriculum and work-based learning experiences help stretch counseling resources and improve access to information and guidance for all students.

- ★ Intensive, comprehensive career counseling and guidance work: fewer students leave school without plans; more see the value of postsecondary education; and students become more engaged in school and motivated to do well.



Organize the School Day into Flexible, Relevant Segments

Introduction

For generations of Americans, high school has been defined by required English, mathematics, science, and social studies, homecoming games and parades, long lines in the cafeteria, and a daily schedule of seven or eight classes, each lasting slightly under an hour and running from the beginning to the end of a nine-month school year. While the subjects of core courses, extracurricular activities, and lines in the cafeteria have changed little, the same cannot be said about class schedules. Across the nation, high school administrators are reorganizing the school day and year by introducing longer class periods, changing the length of time that classes are taught during the school year, and even changing the number of months that school is open. A dizzying array of new schedules have become available to educators, and many are using them to improve the education system.

In the world of school reform, alternative or flexible schedules are frequently referred to as "block schedules." Since the early 1990s, schools have been experimenting with many different versions of these alternative schedules, although they share some common elements:

- Classes are longer than the standard 45- to 50-minute period. They generally range from 70 to 120 minutes, sometimes lasting as long as three or four hours.

- Longer classes mean that students take fewer classes at any one time. For example, in the 4x4 schedule, students only take four 90-minute classes each day, instead of the usual six or seven.

- Individual classes often do not span the full school year. For example, in the 4x4 schedule, a full-credit class lasts one semester, and students complete eight credits in a year. Trimester courses are even shorter. Schools that use this schedule divide

the year into three 12-week terms. In yet another configuration, the school year is divided into two four-month segments separated by a one-month segment, usually in January. Students generally use the one-month segment to conduct a project or concentrate intensively on a single course. They complete three or four classes in each of the longer segments.

The Benefits of Flexible Scheduling

In many of the schools that are pursuing education reform, including the New American High Schools, innovative and flexible approaches to scheduling are a building block for other aspects of school renewal. There are many good reasons for introducing more flexible scheduling into high schools, all of which support the larger goal of improving students' academic achievement. These include the following:

- When teachers and students participate in fewer classes that meet for a longer time, they can focus more intensively on a particular subject. Longer blocks allow students to do in-depth projects, collaborate with their peers, work individually with teachers, and apply the information they have learned in multiple contexts (O'Neil, 1995; Eineder & Bishop, 1997; Rettig & Canady, 1996). These benefits have been shown in both academic and technical classes.

- With fewer classes per day, teachers devote more time to actual classroom instruction and less time to classroom management, such as taking attendance and getting students settled into each new class (Rettig & Canady, 1996). Discipline problems appear to decline as students spend less time in the hallways and more time at their desks (Kramer, 1997; Hackman, 1995; Carroll, 1994; Salvaterra & Adams, 1995; Buckman, King, & Ryan, 1995).

- Fewer classes per day and longer class periods support self-paced learning. Students can concentrate on a smaller number of courses at one time, typically four instead of the usual six or seven. This allows higher achieving students to progress through the material more quickly and gives students who have failed a course the opportunity to repeat it without falling behind other students at their grade level (Woronowicz, 1996).

- When teachers are responsible for smaller numbers of classes and students, they are able to establish closer relationships with their students (Rettig & Canady, 1996; Eineder & Bishop, 1997). Research suggests that strong personal interaction between teachers and students is one of the most important influences on student motivation (Center for Applied Research and Education Improvement, 1995).

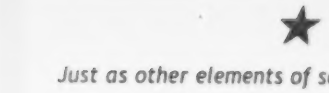
- Longer classes help teachers do a better job of designing and implementing project- and work-based learning opportunities. In particular, teachers can collaborate more easily with colleagues in their own and other disciplines to develop integrated projects and curricula (Rettig & Canady, 1996). They can also use longer blocks of time to meet with business partners about internships, job shadows, and other workplace activities.

Since alternative scheduling was first introduced nearly a decade ago, growing numbers of high schools have embraced this strategy for improving teaching and learning. By the mid-1990s, surveys indicated that up to 39 percent of public high schools had adopted block scheduling, particularly in states such as North Carolina, Colorado, Florida, Virginia, and Texas (Visher, Lauen, Merola, & Medrich, 1998; O'Neil, 1995).

Flexible Scheduling Helps Comprehensive School Reform

Flexible alternative scheduling has become an important tool for implementing many of the strategies that schools are using to achieve school reform. It is probably most useful in career-focused or theme-based education, which often requires students to have longer blocks of time for workplace and project-related activities. Whether schools are structured as single- or multiple-career academies or are requiring career majors, students often must participate in intensive work-related activities that are difficult to accommodate in traditional 45- or 50-minute periods.

In all of the New American High Schools, administrators have confronted the new scheduling demands of reform-based education models. For example, it would be difficult for students from New York's High School of Economics and Finance (EFA) to participate with the school's business partners in seminars at the Sanford I. Weill Institute if sessions were limited to 45 minutes. Longer classes are equally critical to the success of



Just as other elements of school reform require teachers to do things differently so does block scheduling.

workplace learning activities required for graduation at Fenway High School in Boston and the Chicago High School for Agricultural Sciences. In both of these schools, students spend time with the schools' business partners on projects that require blocks of time spent off campus.

Equally important, longer classes can improve the quality of instruction in academic courses that focus on high student achievement. In particular, many teachers at the New American High Schools and elsewhere indicate that longer classes help students become more engaged in project-based activities in English and mathematics courses. These are frequently courses that integrate academic and career-related learning, allow students to apply their developing knowledge and skills, and require interaction between students and teachers (O'Neil, 1995; Elneder & Bishop, 1997). For example, in science courses at David Douglas High School, students in the natural resource career major participate in off-site activities with representatives from the Park Service. This would be difficult or impossible in a traditional class period.

The following discussion focuses on the ways in which the New American High Schools are using more flexible alternative scheduling to support a career-focused curriculum and boost academic achievement for all students. Two of these schools, Sussex Technical High School and Gateway Institute of Technology, have been particularly successful in using these new scheduling techniques.

Sussex Technical High School

In the early 1990s, educators at Sussex Technical High School in southern Delaware set out to transform their school's academic performance and reputation. They decided early on that making learning more relevant to students would be important. This former part-day vocational school joined the Southern Regional Education Board's High Schools That Work (HSTW) network, adopted the HSTW philosophy of promoting high academic standards, and determined that a relevant technical curriculum could be used to help students achieve those standards.

Joining the HSTW network has meant that Sussex students must complete a larger number of mathematics, science, and English courses than were previously required; instruction is delivered in an applied context;

and the school provides the intensive support services that are necessary to make high achievement a reality. School leaders have bundled these components together into a structure that offers students a choice of four career clusters: industrial and engineering technologies, health/human services, business technologies, and automotive technologies. Instruction is based on integrated projects that link academic content with career or technical areas. The success of school improvement efforts at Sussex has been considerable. Sussex's reputation in the community has taken a 180-degree turn, and the long waiting list of students affirms the districtwide appeal of the standards-oriented Sussex formula.

One crucial factor about fitting academic and technical learning into a career-focused curriculum is the school's daily class schedule. Student projects are one of the most important vehicles for engaging students in intensive work-based learning, and a flexible schedule helps accomplish this goal. The Sussex approach combines a few long periods devoted to academic and technical courses and shorter periods that are used for individual work and planning activities. Specifically, each day students attend four classes. Three of these run 90 minutes each. In the shorter session, students work on individual projects or meet in career clusters.

The Sussex schedule, shown here, serves two purposes: (1) it contributes to high academic achievement by meeting the diverse learning needs of various groups of students, and (2) it supports the professional development and lesson planning needs of teachers. Students who are making substantial progress with their projects can proceed at their own pace to complete their work and tackle new problems through dedicated, concentrated efforts. In addition, students who are having difficulty can spend more time on difficult material and meet individually with their instructors.

SUSSEX TECHNICAL HIGH SCHOOL
Daily Class Schedule

7:30-8:15 a.m.	Individual Planning Period
8:15-8:45 a.m.	Cluster Planning Time
8:55-9:55 a.m.	Class 1
10:00-11:25 a.m.	Class 2
11:25 a.m.-12:25 p.m.	Lunch
12:30-1:25 p.m.	Class 3
1:30-2:55 p.m.	Class 4

Second, the Sussex schedule allows teams of teachers to meet regularly during the Cluster Planning Time to coordinate their instruction. All faculty from each career cluster meet weekly, and pairs of teachers often meet several times each week as well. Teachers and administrators report that the 90-minute class periods allow students to participate in more hands-on learning activities, essential for helping them develop an in-depth understanding of course material. This is particularly important

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Longer classes are essential for programs that incorporate significant project-based and workplace learning experiences.

for the required mathematics and science projects that every 10th-grade student must complete and the required year-long senior projects.

Coordinated planning time is also crucial because Sussex is strongly committed to meeting the needs of special education students by including them in all regular classes. This effort requires close coordination between special education and academic teachers, which at Sussex is accomplished in two ways. In some cases, academic and special education ("shared-approach") teachers alternate teaching an entire class. In others, shared-approach teachers provide one-on-one assistance to individual students, both special education and others. With the school's common planning time, these teaching methods are possible because special education teachers can meet with academic teachers on a regular, even daily, basis.

Gateway Institute of Technology

When Gateway Institute of Technology opened its doors in 1992, the school was responding to three issues: meeting a court-mandated school desegregation requirement; creating a curriculum that would serve the needs of students from three schools that had been closed under the desegregation order; and improving the preparation of students in the area for college and expanded employment opportunities in science and technology. With several large engineering and health care employers in the area, founders of the new Gateway Institute decided to offer four career majors in the areas of agriculture, biology, and health sciences; engineering technology; applied physical sciences; and computer science and mathematics.

Similar to the philosophy and approach at Sussex, educators at Gateway are also using a flexible alternative schedule to enhance the connection between students and faculty and to support high academic standards and a career-focused curriculum. Gateway enrolls about 1,600 students in grades 9 through 12. Because of its large size, school leaders decided to adopt a school-within-a-school approach that would give students closer connections with a consistent group of teachers. All freshmen and sophomores take the same core academic classes, including Algebra I in the 9th grade. During their first two years at Gateway, students participate in one of four houses. Each house has four teachers—one each from English, social studies, mathematics, and science—who work together

with a school counselor. These teams are responsible for delivering an integrated, cross-disciplinary curriculum to about 90 students. During the 9th and 10th grades, students become familiar with the school's four career clusters, and they select one before entering the 11th grade.

The original block schedule used at Gateway called for students to meet in extended periods two days per week. The other three days the students attended all seven of their classes in regular length periods. In 1996, a team was put together to examine block scheduling to increase the number of extended periods and facilitate instruction not only in the specialty areas but also in the 9th- and 10th-grade houses. Committees of staff members studied several models and recommended a modified A-B schedule. This schedule provides four extended periods Monday through Thursday and eight shortened periods on Fridays. Careful work on the master schedule enables all students in the 9th- and 10th-grade houses to meet with their core classes either five days a week all morning or five days a week all afternoon. Also, the schedule is arranged so that 11th graders have their specialty area classes all day on Mondays and Wednesdays and 12th graders meet with their specialty area classes all day on Tuesdays and Thursdays.

In the year the new schedule was started, examination of students' grades showed a decrease in the failure rate and an increase in the number of students on the honor roll. Since there were concurrent changes which may have also had an impact on this change, it is difficult to determine if the gains in achievement were due to the new schedule or to the other concurrent changes. Students, however, were convinced that under the new block schedule, they were better prepared for their classes because they only had to attend four classes per day and each class every other day. When administrators reviewed the impact of this change, some believed that student grades had improved.

At Gateway, block scheduling supports the curriculum in a variety of ways. During the 9th and 10th grades, students spend three hours per day with their house teachers, and they also can use 90 minutes per week to complete various assignments. Students and teachers agree that longer periods spent with house teachers created the close student-teacher connection that administrators had hoped for when they instituted the flexible scheduling approach.

During the 11th and 12th grades, students take courses such as Manufacturing Engineering or Industrial Chemistry, which include significant

project-based activities. In addition, they work as interns or participate in longer research projects under the mentorship of scientists, physicians, and researchers at nearby Washington University, the Barnes Jewish Medical Center, St. Louis University, or the University of Missouri, St. Louis. All students in the health sciences are required to complete an internship during their senior year; students visit their sites for a full eight hours on Tuesdays and Thursdays. The health instructor from Gateway also benefits from the block schedule and uses this time each week to visit students at their internship sites. These activities require students to work several hours per week off-campus, and the block-scheduled days provide a vehicle that allows students to meet these off-site responsibilities.

Conclusions and Lessons Learned

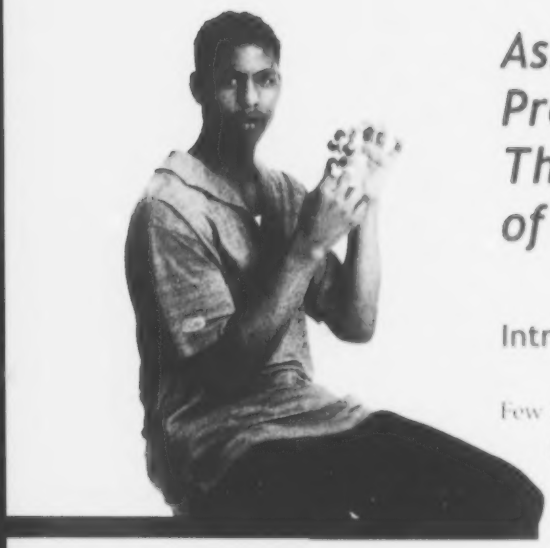
Whatever the local terminology might be—flexible, alternative, or block scheduling—new approaches to organizing the school day and year are being tried throughout the country. Some schools have put all of their energy into new schedules, while others are using new class configurations as part of more comprehensive change. In the New American High Schools, flexible scheduling is part of a complex set of changes in school structure and approach aimed at raising the academic achievement of all students. The lessons these schools have learned by using new schedules will be relevant to educators in every high school concerned about improving student achievement, but especially in those pursuing comprehensive reform. Some of the major lessons from the New American High Schools are the following:

★ Longer classes are essential for programs that incorporate significant project-based and workplace learning. Through extended classes, students can study a subject more intensively in the classroom; participate in projects that require collaboration with peers and interaction with teachers; and generally benefit from applied learning approaches. Outside the classroom, longer class periods allow students to engage in career exploration activities (such as industry tours and job shadows), as well as internships and community service activities.

★ New schedules should not be cast in concrete, but should be reviewed and modified as necessary. Research suggests that all key stakeholders—teachers, students, administrators, and parents—should be part of the planning process for creating a new schedule (Cummingham & Nogle, 1996; Hackman, 1995). However, even with the best of planning, the first new schedule that is tried may not be the best one. As the Gateway High School experience demonstrates, educators need to evaluate a new schedule, look at its influence on student achievement, and make improvements when they appear to be needed.

★ Teachers can benefit from block scheduling as much as their students. When teachers' needs for planning and collaborating are built into the schedule, these new scheduling approaches can enhance cross-disciplinary cooperation; bring teachers into closer contact with business partners; allow teachers to participate in internships; and give them time to develop new career-focused lesson plans.

★ Just as other elements of school reform require teachers to do things differently, so does block scheduling. As a result, teachers must have significant professional development to prepare them to move away from the lecture approach toward hands-on, interactive instruction. Effective professional development is especially important if teachers are to avoid falling back on lecture presentations, which are especially inappropriate for longer classes (O'Neil, 1995).



Assess Students' Progress by What They Are Capable of Doing

Introduction

Few issues in education have received more attention in recent years than assessment. The debate about how to document and measure students' progress through school, and what role assessment should play in curriculum design, has been lively and sometimes contentious but also rich with new thinking. Just as common perceptions about what is taught and how it is taught are undergoing dramatic change, so is the way people are thinking about how knowledge should be measured.

Increasingly, school leaders are looking for and trying out alternative—or authentic—assessment techniques not only because they may provide more valid measures of what students are learning (Darling-Hammond, Ancess, & Falk, 1995; Stecher et al., 1997) but also because they may shape what students should learn. For example, assessment that is closely aligned with standards, curriculum, instructional practices, and educational values and goals can encourage teachers to think deeply about their teaching objectives and how to teach with those objectives in mind (Darling-Hammond et al., 1995).

The New American High Schools vary greatly in terms of how each school views and uses assessment. Some rely more than others on standardized achievement tests and actively encourage teachers to adapt their teaching practices to ensure that students do well on these tests. Others shun standardized achievement tests, arguing that they fail to capture what their schools are trying to teach students to know, think, or believe. These schools devise other methods for testing that may be less rote, less mechanistic, and more authentic. Despite these wide differences, all of the New American High Schools are deeply committed to the basic concept of accountability. Educators in these schools firmly believe that students and teachers alike should be able to demonstrate what they know, think, believe, and can do. Assessment methods should

be fair, consistent, reliable, and useful, they say. As a result, most of the New American High Schools have chosen to combine various methods of assessment.

Some schools are finding that students who do poorly on standardized achievement tests sometimes do much better when alternative assessment techniques are used.

Alternative assessment techniques are still in the development stage throughout the country. The New American High Schools are among those pioneering brand-new assessment techniques, largely because they are trying out new instructional practices. With the rise of career-focused curricula, schools need to assess not only students' abstract knowledge but also their concrete skills. Several schools use the student portfolio, a collection of completed work that demonstrates the student's level of knowledge and skills. In addition, some schools use performance tasks or exhibitions as an assessment tool in which students are asked to do what they know in front of a panel of expert evaluators and sometimes also their peers. For example, a student may be asked to solve a mathematical problem on the blackboard or perform a concrete task such as welding two pieces of metal together. A third alternative assessment many New American High Schools rely on is the essay. The essay has some distinct advantages over traditional multiple-choice exams because a student can demonstrate substantive knowledge on a topic through writing, as well as expository and language skills. In some schools, this approach is even used to test mathematics skills by asking students to use language rather than mathematical symbols to explain and demonstrate mathematical concepts and skills. Moreover, other schools are selecting the standards and benchmarks approach in which students are held accountable for a well-defined set of competencies and are judged according to how closely they meet those standards. Although alternative assessment methods are diverse and most are still in the early development stage, their proponents argue that they generally have more authenticity than the conventional multiple-choice, paper-and-pencil test.

Two New American High Schools were selected to illustrate how alternative assessment methods are used: Fenway High School[20] in Boston and the Thompson School District in Colorado. Several other schools, including Encina High School, William F. Turner Technical Arts High

[20]Until 1988, Fenway High School was called "Fenway Middle College High School." One reason the school's name was changed was that Fenway moved from its location at Bunker Hill Community College, where many students took college courses, to its present location in downtown Boston.

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School, Gateway, and the High School of Economics and Finance, also use alternative assessment techniques. However, Fenway was selected because its educators have made a strong commitment to alternative assessment, and the Thompson School District because it has clearly demonstrated its use of standards and benchmarks as a tool for both designing curriculum and assessing knowledge and skills.

Fenway High School

Fenway High School is a pilot school in Boston serving 280 students. It was started 10 years ago as a program within a larger comprehensive school for academically at-risk youth. Even today, there is still very little that is conventional about this school. Fenway has made significant reforms of many kinds, but two in particular stand out: (1) grouping students in small houses—with about 80 students and four to six teachers—and organizing workplace learning and, somewhat more loosely, curriculum for each house around the skill requirements of its major business partner and (2) emphasizing alternative assessment approaches in which students demonstrate their knowledge and skills through classroom and workplace activities. To better understand the Fenway approach to assessment, it is necessary to describe its house structure, the close collaboration between the school and three business partners, and its emphasis on a curriculum that integrates intensive work experiences with classroom activity.

Between 1988 and 1992, Fenway established three partnerships with local business organizations: Children's Hospital, CVS Pharmacy, and the Boston Museum of Science. Executives from these organizations contacted school leaders because they felt they could contribute to education reform efforts while also enhancing their reputations in the community or possibly increasing the diversity of their staffs in the future.

The strong industry focus of the houses at Fenway serves as the foundation for many of the defining features of this school. These include linkages between classroom curriculum and activities in the workplace and a schoolwide commitment to portfolios and presentations as the primary assessment tool. To graduate, all students must complete six-week internships with their business sponsor during their junior and senior years. Junior-year internships last 15 hours per week; senior internships are 30 hours per week. The internships contain a strong career development component aimed at exposing students to the wide range of

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Schools that use a range of assessment tools are more likely to get the broad range of information they need to evaluate progress.

careers available in each business. They are also designed to help students acquire work-readiness, academic, and technical skills. For example, in a junior-year internship at CVS, students learn about retail marketing, office management, and the occupational skills and knowledge required of registered pharmacists. In a senior-year internship at Children's Hospital, students learn how to assist in drawing blood from young patients.

Critical-thinking and problem-solving skills, self-esteem, and leadership ability are all given high value in this school. Fenway educators try to develop these characteristics in their students by using plenty of real-world experiences that are direct, relevant, and motivating. It is not surprising that this school relies more on performance-based tasks and portfolios than on standardized multiple-choice achievement tests.

Fenway is now in its fifth year of graduating students through the use of portfolio and exhibition assessments rather than Carnegie units and points. Each senior must present five portfolios—mathematics, science, humanities, advisory, and senior internship and senior project—to a graduation committee. The committee consists of two Fenway teachers, an outside expert, an administrator, a parent, and another student. The portfolio presentations are graded using a rubric to indicate if the student "needs more" work, "meets" the required competencies, or "exceeds" the criteria. Criteria vary for each discipline. For example, for the humanities portfolio, students must demonstrate that they can write a cogent essay on a topic that they have chosen, answer questions from the committee, show more than one point of view, present evidence, demonstrate relevance, and use correct grammar in their writing.

The end of the year is a busy time for seniors and faculty at Fenway, as graduating students work to complete internships and present portfolios or exhibitions in as many as five subject areas. Despite this hectic schedule, most seniors manage to graduate. In 1997–98, 36 seniors began the year, and all but three graduated.

Each exhibition takes at least one hour to present, and the committee must put in long hours reading portfolios beforehand. Fenway does not limit this rigorous exercise to seniors. Two years ago, educators instituted the Junior Review, requiring juniors to present their portfolios to panels made up of faculty members and representatives from the school's

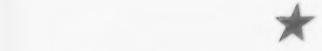
three collaborating partners. Juniors can invite a sophomore to their presentation (to give the younger student a taste of what is to come) as well as parents or guardians.

Using these alternative assessment techniques does present certain challenges to the educators at Fenway. Students, teachers, and administrators at the school may seem overwhelmed at times by the demands of this exhibition- and performance-based assessment system, and some teachers feel they are not always fully qualified to evaluate performance by portfolio and presentation. Despite these barriers, most enthusiastically support it. Although the system is still a "work-in-progress," it is unlikely that this school will ever return exclusively to using standardized achievement tests and other conventional assessment methods. Faculty and students recognize how portfolios and exhibitions can draw upon students' combined experiences in the classroom and the workplace and force students to make connections across disciplines. In addition, Fenway educators are convinced that standardized achievement tests cannot capture the whole picture. They point to students who do poorly on these tests while excelling in their presentations as proof of these tests' limitations. They also see how the skills that students demonstrate in these events cannot be adequately captured by other methods. When these types of alternative assessment are used successfully, they demonstrate how the process of creating the portfolio or preparing for an exhibition can enhance learning.

Thompson School District

Thompson School District, located at the foot of the Rocky Mountains about an hour's drive north of Denver, has an enrollment of 13,500 students who attend a total of 18 elementary schools, four middle schools, and four high schools. The student population is about 90 percent white. The largest minority group is Hispanic. The socioeconomic status of the population in this area has steadily risen with the influx of young professional families over the last 10 years, due in part to the growth of the high-tech industry in the area. As a result of the population increase, school enrollment has doubled in the last decade.

Since 1991, the Thompson District has undergone fundamental reforms that have affected the way all of the schools in the district operate. It is the only New American High School site where the reform effort is conducted districtwide, rather than being confined to one or two schools. In the Thompson District, all schools work together with the district to ensure that from kindergarten through 12th grade, children experience a smooth sequence of experiences designed to boost not only their academic achievement but also the skills and knowledge they need to succeed in careers. Thompson District has become a model for school-to-work programs in other districts in the state, as well as throughout the country. Few districts in the nation have school-to-career programs with the same breadth and depth.



The best assessment systems not only measure learning but also enhance the learning process.

The second reform effort for which the Thompson District has attracted attention is its use of standards and benchmarks. The state of Colorado has been at the forefront of the movement to adopt a standards-based curriculum, and Thompson District has been a leader within the overall state endeavor. This district has demonstrated that it quickly adopts and implements state standards and continuously pushes for adding additional standards to more subjects and grade levels. As early as 1988, the district decided to hold students accountable for what they have learned by resolving that a diploma will be awarded only after a student demonstrates mastery of core competencies.

In 1993, Colorado passed legislation mandating the development of model content standards, and two years later, the state adopted such standards in five subjects: language arts, mathematics, science, history, and geography. Though districts throughout Colorado began to gradually phase in this first set of standards, Thompson District had already adopted standards by 1990, which only needed to be revised to satisfy state requirements. The district did not stop there, however. By 1995, district-level administrators and the board proposed a comprehensive standards-driven system that applied to all subject areas, including vocational subjects (or applied arts as such courses are called in the district). Standards in art, music, physical education, world languages, and civics are all now being developed and put in place.

Thompson District has developed competencies for many of the standards currently in use, including the language arts, mathematics, and science. For example, in the language arts, students demonstrate their skills and knowledge level in six areas:

- Students read and understand a variety of materials.
- Students write and speak for a variety of purposes and diverse audiences.
- Students write and speak using conventional grammar, usage, sentence structure, punctuation, capitalization, and spelling.
- Students apply thinking skills to their reading, writing, speaking, listening, and viewing.
- Students read to locate, select, and make use of relevant information from a variety of media, reference, and technological sources.
- Students read and recognize literature as an expression of human experience.

In each of these six areas, there are additional criteria detailing more specifically the expected student outcomes.

Data generated from measuring students' proficiency in meeting the standards for their grade levels now fill the district's annual reports and other publications targeting school stakeholders. Thus, parents can now easily look up tables that show, for example, the percentages of 9th-grade students in 1996–97 who (1) had not yet been tested (6 percent), (2) were found to be not proficient (10 percent), (3) were found to be performing at an acceptable level (49 percent), and (4) were found to be exceeding the acceptable level in reading, writing, speaking, and viewing (36 percent). From these data, teachers can easily see where more work is needed. Currently, performance data in this district are being directly used to inform both district- and school-level decisions about how to improve instruction and curriculum.

The district relies on a range of assessment tools, each selected for a different purpose. For example, proficiency tests are used to measure proven skills in subjects such as reading and mathematics. These tests are given each year, and students must pass them to move on to the next grade. Curriculum tests, which are given to students in selected grades, are used to monitor growth and achievement and measure the relative effectiveness of certain programs of instruction. Classroom assessments continuously monitor student progress and include methods such as teacher observations, teacher-constructed tests, portfolios, performance

tasks, and self-assessments. The district also relies on standardized tests in order to compare their results with those of the national norm or other districts. These include the Iowa Tests of Basic Skills, the Explore Achievement and Career Assessment test, PLAN Achievement and Career Assessment, Advanced Placement Exams, State Standards Test, ACT, SAT, and others.

The Thompson District has invested substantial time and resources in developing its standards-based assessment system and is beginning to use the system and the data it generates to improve the quality of the education it provides to students. Standards and benchmarks are referred to in district materials as the "drivetrain" for much of the change that is now going on in the community, which includes improving instruction, designing and aligning curriculum, planning instruction strategies, planning professional development, and integrating work-based experiences. In short, nearly all the reform efforts occurring in this district are tied, in some form or another, to the standards and benchmarks system.

While the system has been carefully designed, its planners would be the first to admit that the district is still a long way from fully implementing the assessment system or the standards and benchmarks that drive it. Once the plan was in place by the end of 1997, significant resources had to be invested in professional development to prepare teachers for the new system, and in educating parents about the changes to come. The district has produced some model material designed to answer concerns and questions parents often have as schools shift from traditional assessment to standards and benchmarks.

Not all of the pieces are in place yet, but steady progress is being made; the momentum is strong; and the district, principals, teachers, and students are already seeing the results and reaping the rewards in the form of increased knowledge of which programs are working better than others. Abundant information about student progress and achievement is now available in the Thompson School District, and student achievement, as measured by the numbers of students who are deemed proficient and meeting standards, is starting to climb.

Conclusions and Lessons Learned

The New American High Schools vary considerably in how they perceive and use assessment. While some prefer standardized achievement tests, others are more committed to alternative assessment techniques or use a combination of methods. What these schools have in common, however, is their belief that assessment methods should be fair, consistent, reliable, and useful and clearly show what students know and can do. Several important lessons emerge from the diverse experiences of the New American High Schools in using assessment:

- ★ Schools that use a range of assessment tools, each selected to meet certain objectives, are more likely to get the broad range of information they need to evaluate school and student progress and make program improvements.

- ★ Some schools are finding that students who do poorly on standardized achievement tests sometimes do much better when alternative assessment techniques are used.

- ★ The best assessment systems not only measure learning but also enhance the learning process.

- ★ Effective assessment by portfolio and exhibition depends in large part on teacher access to professional development and support to help teachers devise meaningful criteria for judging portfolios and performance-based tasks and apply these criteria effectively.

- ★ Challenges most often facing schools using authentic assessment are (1) developing and scoring performance-based tasks, (2) finding the time it takes to prepare for and participate in student presentations, exhibitions, and tasks, and (3) training teachers who are not necessarily masters of the industry domains in which they are expected to evaluate student work.

Forge Partnerships with Two- and Four-Year Postsecondary Institutions

Introduction

The majority of high school graduates in the United States now pursue postsecondary education at either a four-year college, a two-year college, or a vocational/technical school offering shorter training.[21] And most high schools, particularly the New American High Schools, deliberately strive to maximize the number of their own students who go on to postsecondary education by offering them courses and experiences that will increase their chances of being admitted to and succeeding in college.

Despite the increased emphasis on postsecondary education, at least two problems persist and reflect the need for stronger connections between the secondary and postsecondary sectors. First, many high school students who do enter postsecondary institutions are failing in alarming numbers. According to a recent article in the *San Francisco Chronicle* (Olszewski & Hamburg, 1998), as many as one in five freshmen at the University of California, Berkeley, required remedial instruction in language arts before they could attempt regular coursework. Nationwide, approximately 24 percent of all students who had attended some postsecondary education since high school graduation did not stay long enough to get a degree or a certificate. The highest noncompletion rates were among African-Americans and Hispanics (U.S. Department of Commerce, 1992). Second, although research demonstrates clearly that those who have postsecondary education enjoy significant advantages in the labor market, large numbers of high school graduates still make poor choices about what college classes to take or do not pursue higher education at all.

[21] More than 70 percent of 1992 high school seniors planned to attend a postsecondary institution immediately after graduation. Two-thirds of these students intended to enroll in a four-year college. The percentage of seniors entering postsecondary education increased from 50 percent to 62 percent between 1973 and 1991. See U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, Second Follow-up, 1992.

These problems are exacerbated by the dominance of the traditional college preparatory curriculum. Except for helping college-bound students meet a broadly defined set of academic entrance requirements, high schools have done little to ensure that the courses they offer will prepare students for other types of education or training beyond graduation. In addition, curriculum between these two levels of education has not been well articulated.[22] This impedes a successful transition from high school to postsecondary education for many students (Pauly, Kopp, & Haimson, 1995; Grubb, 1995; Kazis & Niles, 1994; Nathan, 1995; Pelavin & Kane, 1990).

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Virtually all of the New American High Schools try to ensure that most of their graduates are prepared for and succeed in postsecondary education.

First, with support from the 1990 Carl D. Perkins Vocational and Applied Technology Education Act, the Tech Prep program has helped spawn growing numbers of four-year programs that span high school and two-year postsecondary programs.[23] This attempt to better articulate high school curriculum with postsecondary vocational training has gained more than just a toehold in high schools and community colleges. For example, in 1991, 44 percent of community colleges reported having a Tech-Prep program, with many more planning to start one in subsequent years (U.S. Department of Education, 1992). By 1996, as many as 50 percent of high schools offered such a program (Visher, Lauen, Merola, & Medrich, 1998).

Second, the 1994 School-to-Work Opportunities Act has boosted efforts to improve coordination between secondary and postsecondary education. Hundreds of partnerships between school districts, community colleges, and other organizations have now formed across the country. A goal for many of these partnerships is closer collaboration between high schools and community colleges. By 1997, on average, 2.5 colleges were included in each of these local partnerships, a total of almost 1,500 institutions. Collaboration has taken many forms, ranging from articulated curriculum to dual enrollment agreements that allow students to take college courses if they have exhausted the high school's offerings.

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[22] "Articulation" is a process for coordinating the linkage of two or more educational systems within a community to help students make a smooth transition from one level to another without losing time, duplicating coursework, or losing credit (Hull, 1992).

[23] Tech-Prep programs typically run parallel with college-preparatory programs and target career-bound students. They consist of integrated academic and vocational curriculum, emphasize applied learning, span grades 11, 12, 13, and 14, and often build upon career clusters (Hull, 1992).

Faculty from high schools and colleges sit on committees together; colleges help fund partnerships; and in a few partnerships, colleges are even the lead agency (Hershey, Silverberg, Haimson, & Hudis, 1999).

Reflecting some of these policy emphases, the New American High Schools are using a broad range of strategies to ensure that more graduates enter and succeed in postsecondary institutions. These schools:

- support Tech-Prep programs,
- increase students' awareness of the connections between careers and postsecondary education requirements and help students make informed choices about postsecondary education,
- enhance high school curriculum to include more college preparatory classes and upgrade curriculum for all students,
- locate high school campuses on college campuses or ensure easy physical access to colleges,
- form collaborative arrangements with local colleges so that high school students can take college courses or take college credit courses while in high school (dual credit),
- provide post-graduation support and retention intervention to high school graduates,
- emphasize preparation for postsecondary technical or vocational education, not just four-year colleges,
- raise standards and expectations, and
- work to ensure that high school curriculum is better articulated with college curriculum.

The need to "open the doors of college to all. . . and make the 13th and 14th years of education as universal as high school" ("Call to Action" speech by President Clinton) was one impetus for the New American High Schools Initiative. As a result, all of the New American High Schools are actively working toward this goal. Two schools, the Chicago High School for Agricultural Sciences and the Gateway Institute of Technology, are highlighted here for their energetic and creative efforts in preparing students for higher education.

Chicago High School for Agricultural Sciences

The Chicago High School for Agricultural Sciences (CHSAS) is located in a predominantly white, working-class neighborhood in the Mount Greenwood community of southwest Chicago. CHSAS is a college preparatory magnet high school that prepares students for careers in agriculture but is guided by the primary mission to send all graduating seniors to four-year colleges. This acclaimed school, with a limited enrollment of 600 and nearly 10 applicants for every opening, is now housed in a modern facility with a media center, gymnasium, weight room, Olympic-size swimming pool, auditorium, produce shop, nursery, aquatics fish hatchery, modern food chemistry lab, small barnyard, and a cafeteria—in addition to a 72-acre parcel of cultivated land, often called Chicago's "last farm."

Although CHSAS has the smallest enrollment of any public high school in Chicago, it is one of the most prominent in terms of the unique education it offers its students in agribusiness, commodities exchange, food sciences, horticulture, veterinary sciences, and federal food quality inspection, courses unavailable at any other public high school in Chicago. The school earned a nationwide reputation for academic excellence and abundant hands-on learning opportunities. In the well-equipped greenhouse, horticulture students conduct lab experiments and care for plants and flowers that are sold at numerous public events. A garage houses equipment, rabbits, chickens, turkeys, and sheep.

The most important ways in which CHSAS has helped graduates pursue postsecondary education are by articulating curriculum offered at the school with college-level courses and by raising graduation requirements. Curriculum designers at the school worked with educators from the University of Illinois at Champaign-Urbana to develop a program of study that would meet university entrance requirements. As a result of these efforts, a rigorous college preparatory curriculum was created in which all students are required to complete algebra, geometry, advanced algebra and trigonometry, biology, chemistry, physics, and a foreign language, in addition to four years of coursework in agriculture. Students at this school are required to graduate with 31 credits, rather than the 20 required by the state of Illinois.

CHSAS also offers a Tech-Prep program in collaboration with Truman Junior College called F.R.E.E (Chicago High School for Agricultural Sciences Food Science Research for Education and Employment). F.R.E.E prepares students for careers in the growing food science sectors. Students begin career-related studies in the 11th grade and after graduation go on to pursue a two-year Associate of Applied Science degree. Students have the option of obtaining a four-year baccalaureate degree as well. While the primary postsecondary partner in this program is Truman Junior College, CHSAS is working to involve other colleges in this partnership such as Daley Junior College and Harold Washington College.

CHSAS is also a partner in an initiative called the Agricultural Cooperative Education (ACE) program with the Chicago Board of Trade, the Quaker Oats Company, and the University of Illinois, Cooperative Extension Service. This program provides students with opportunities to acquire marketable skills and occupationally specific knowledge in agriculture science. Students combine learning experiences gained in on-the-job placements with classes in related vocational subjects. These work-based learning experiences are highly integrated with classroom activity, and students receive pay as well as credit for the courses. Nearly 25 companies provide the on-the-job positions.

Many schools try to provide opportunities for students to take special courses or perform research internships at local colleges.

A final strategy used by CHSAS to prepare students for postsecondary education is to send seniors on research internships during the summer. Each summer about 35 seniors spend six weeks on a college campus working with professors on research projects. During these internships, students earn a stipend and keep a journal documenting their experience. For example, one senior did her research internship at Iowa State University, where she spent the summer drawing blood from calves, measuring their respiratory rates, and talking to professors about college coursework.

Three out of four CHSAS seniors now continue their education at a four-year college, including prestigious institutions such as the University of Minnesota, the University of Chicago, the University of Iowa, and Northwestern University. One-third of these students pursue careers in the agricultural field. A large number of them receive scholarships, reflecting among other things, their consistently high scores on standardized achievement tests and the high percentage of

graduates who meet or exceed state standards in reading, mathematics, writing, science, and social sciences. The commitment CHSAS has shown to high academic standards, combined with building relationships with both local postsecondary institutions and those outside the area, demonstrates how this school is helping its graduates continue their education.

Gateway Institute of Technology

Opened in 1992 and located in inner-city St. Louis, the Gateway Institute of Technology (Gateway) is a public high school serving 1,600 students. The school was established in response to a desegregation court order mandating a high-technology magnet high school. Three schools were merged to form Gateway: a health careers high school, a mathematics and science high school, and an old vocational school. The magnet school is housed in a building with more than one-half million square feet, which includes academic classrooms, laboratories, a greenhouse, an aviation building housing several airplanes and helicopters, a library and media center, auditoriums, gymnasiums, and an indoor swimming pool. Also on the school grounds are athletic fields and a tennis court.

Gateway has introduced a new concept in education to the St. Louis area. The school integrates a strong academic curriculum, including rigorous course requirements in mathematics and science, with intensive technical and vocational courses in high-growth technology fields. The belief that all students can perform at a high academic level is central to the culture of this educational community. At Gateway, high academic achievement, along with the continuation of education after graduation, is the standard to which all students are expected to aspire.

Because the school is large, Gateway has organized schools-within-a-school, or houses, consisting of 90 students and four instructors (one each in English, mathematics, science, and social studies). Staff within the houses work as a team, using integrated curriculum. Eleventh and 12th graders choose one of four specialty areas: agricultural, biological, and health sciences; applied physical science; computer science and mathematics; and engineering technology. At the end of their sophomore year, students pick a career major within one of the four specialty areas:

- Agricultural, biological, and health sciences majors include agricultural science, environmental science, biology, pre-medicine, pre-veterinarian, pre-nursing, rehabilitation therapy, and biomedical lab techniques.

- Applied physical science majors include chemistry, chemical industrial lab, computer-based technology, engineering chemistry, engineering physics, and physics.

- Computer science and mathematics majors include computer science and mathematics.

- Engineering technology majors include electrical engineering, manufacturing, engineering, architecture and design engineering, aviation maintenance, and Air Force Junior ROTC.

To provide students with access to both academic and vocational curricula at advanced levels, Gateway has sought out collaborative relationships with postsecondary institutions. Over the years, the school has set up several partnerships with nearby postsecondary institutions, sustained by a mutual commitment to ease students' transition between high school and college.

For example, students majoring in manufacturing within the Engineering Technology specialty area participate in a unique collaborative effort with the St. Louis Community College (at the Florissant Valley campus). Leaders at Gateway recognized that while their manufacturing students acquire considerable theoretical knowledge in their classes, their exposure to more applied learning experiences and up-to-date equipment is limited. To solve this problem, the St. Louis Community College and Gateway worked out an agreement by which 10 students per semester attend six 4-hour sessions at the community college. Here, using laboratories and other equipment, they learn advanced skills in such topics as electrical power sources, computer-aided design, and circuit board layout. They also have a chance to do work in the soldering and assembly labs. Students' grades for the courses they take at Gateway are determined with input from their community college instructors.

Students majoring in agricultural, biological, and health sciences have a similar opportunity as a result of another local partnership. Gateway, the medical school in St. Louis at Washington University, and the St. Louis City and County School Partnership Program have designed a course that allows high school students to use the well-equipped facilities of a medical school. Called the "Saturday Scholars," these teacher-selected students meet on four consecutive Saturdays. The program is designed to introduce high-achieving students to the biological sciences at the postsecondary level. Students from Gateway and other city high schools study anatomy under the guidance of fourth-year medical students and their advisors, the professor of anatomy, and the assistant dean for admissions and student affairs. Each Saturday, students attend a lecture focusing on a specific topic; following the lecture, they go to the anatomy lab where, using human cadavers, they learn about such topics as the cardiovascular, respiratory, gastrointestinal, and reproductive systems.

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High schools should keep in mind that postsecondary institutions also have strong incentives to collaborate with high schools.

In addition to these partnerships, Gateway has worked out articulation agreements with all three of the St. Louis Community College campuses. The South Campus, Meramec, has a strong program in horticulture and agriculture science, so faculty from this Department have worked with Gateway's faculty to establish good lines of communication and a coordinated curriculum. As a result, Gateway students become well-acquainted with the program offered at Meramec. The campus closest to Gateway is Forest Park, and one of its strengths is its course offerings in health-related fields. Gateway graduates can be admitted into the nursing program there, bypassing the long waiting list because they have already taken many college-level courses. In addition, Gateway has articulation agreements with the third campus, Florissant Valley, which has a strong physical science department. Gateway has also worked out an articulation agreement with Jefferson College, a junior college located outside of the county, to take advantage of its strong engineering program. Teachers from Jefferson College work with Gateway teachers to ensure that curriculum in the relevant courses is well-aligned. Finally, Gateway has developed an agreement with a local proprietary school that offers a two-year associate's degree.

The number and complexity of the arrangements that Gateway has made with postsecondary institutions in the area attest to this school's commitment to encouraging its graduates to continue their training and education. The statistics that Gateway keeps on a variety

of measures corroborates the success of these collaborative arrangements with postsecondary institutions. For example, Gateway offers the highest number of AP courses of all the high schools in the district, with 103 students enrolled. In addition, Gateway has the highest number of students in the district (140) enrolled in dual credit courses (19 percent of the student body). By 1996, the percentage of students taking college entrance tests (ACT/SAT) was almost double the percentage in the district (60.5 percent at Gateway, compared with 38.2 percent in the district), and Gateway students scored higher than others in the district in English, mathematics, reading, and science.

Conclusions and Lessons Learned

To raise academic achievement and help students make a successful transition from secondary to postsecondary education, most of the New American High Schools have tried a number of strategies to involve local two- and four-year col-leges. The experiences of the two schools described in this chapter yield a number of valuable lessons for other schools:

★ Although the work is difficult and time-consuming, aligning the secondary and postsecondary curriculum has at least two clear benefits: it increases students' awareness about the content of college-level courses and how they should prepare for them, and it increases the chances that students will actually enroll in postsecondary schools.

★ Many schools try to provide opportunities for students to take special courses or perform research internships at local colleges. These efforts pay off in terms of increasing student motivation to attend school, helping students to become more aware of their options, and raising their achievement so that they are more likely to be admitted to such schools.

★ It is helpful for schools to be clear about postgraduation goals. Some schools work to ensure that virtually all students attend a four-year college; others work to increase the number of students who attend a two-year postsecondary institution. Practices to promote these goals necessarily vary.

★ Virtually all of the New American High Schools try to ensure that most of their graduates are prepared for and succeed in postsecondary education. Raising standards and expectations—including offering college-level classes or increasing the number of units required for graduation beyond district or state requirements—is the most typical strategy to reach that goal.

★ Some schools make effective use of better or more sophisticated equipment at community colleges that may not be affordable at the high school level. A successful model is to allow students to take the academic course at high school and to get the hands-on instruction at the community college. Another option is to move the entire course to the community college.

★ High schools should keep in mind that postsecondary institutions also have strong incentives to collaborate with high schools. They, too, want highly qualified, aware, and motivated students.

★ Good post-graduation follow-up data are essential to document the extent to which strategies such as these actually affect students' ability to enroll in colleges, make the right choices, succeed, and graduate.

Forge Active Student Support Alliances Involving Educators, Employers, Parents, and Communities

Introduction

Families, communities, and schools have always shared responsibility for educating the next generation. In recent decades, however, the balance among these groups has clearly changed (Brint, 1998). Employers' needs for workers with higher skills and more postsecondary education and training have shifted more responsibility into the hands of professional educators. At the same time, with growing numbers of single-parent families, increasingly stressed two-earner households, and the influence of drugs, gang culture, and violence, many communities and families are less able to nurture their children's academic and social development. As a result, schools today can and do become "safe havens" for many young people who often find at school the adult attention, structure, and community they lack at home. Increasingly, school administrators realize that they cannot create these havens alone. If schools are to become reliable support systems for learning, they must bring their communities and families back into the education process through effective support alliances and a shared sense of commitment to young people.

Teachers—who have the greatest amount of contact with students—have always been in the front lines as schools looked to bolster their support systems for students. They are, after all, often the adults who are most present, most reliable, most attentive in the world of many students. Consequently, many teachers make a significant difference in the lives of their students, as mentors, friends, and role models, and as a link between in-school and outside experiences. To succeed in this broadened role, teachers need skills that go beyond those required to design lesson plans and teach a classroom of children. The most enlightened schools are accepting this new role and responsibility of teachers, not only as legitimate but also as necessary. These schools are finding ways to develop, acknowledge, and reward teachers and counselors who go the extra mile for their students.

Partnering with Employers, Community Groups, and Parents

More and more, employers are looking for ways to collaborate with their local high schools, sometimes with the goals of improving the work readiness of graduates and focusing curriculum and counseling more directly on careers (Hershey, Hudis, Silverberg, & Haimson, 1997) and sometimes to simply enhance their public image. Schools are responding enthusiastically to these partnership offers. Most frequently, they are working with employers to create meaningful work experiences for students and, ideally, to connect these activities to classroom instruction. So, instead of treating outside jobs as an activity students do on their own time and for their own reasons, schools are attempting to integrate those experiences by bringing employers into the school and the school into the workplace.

Less common, but possibly even more important for students who lack adult support at home, are collaborations between employers and educators to promote mentoring in the workplace. Through these efforts, employers and occasionally labor unions are focusing on students' academic and career development through workplace supervisors and designated mentors who counsel students informally about jobs and career options (Hershey et al., 1997). In the best of these relationships, mentors go a step farther and serve as role models who can counter destructive behavior and aid students in their emotional development into adulthood (Burton, 1977). The research indicates that mentoring works. Students who have this experience tend to do better in school and after graduation than students who do not. The problem is that there are rarely enough mentors to go around.

Few schools can successfully raise academic standards and also meet the demanding nonacademic needs of their students without considerable help from their communities, especially local social service agencies and nonprofit community organizations. A small, but convincing, group of studies have documented the benefits of improved partnerships between high schools and these organizations, including enhanced student academic performance and attendance (Golan, Wagner, Shaver, Wechsler, & Williamson, 1996; Rossman & Morley, 1995; Center for the Study of Social Policy, 1995).

Partnerships between schools and community agencies have a time-honored history, with American schools offering social services to

students for more than a century. But, this collaboration has never been more important or more challenging than today (Sedlak, 1995). Schools simply do not have the resources, space, or expertise to provide badly needed assistance such as substance abuse counseling, support for pregnant or parenting teens, or even food and shelter. As a result, schools are opening their doors and often literally housing social service programs of all kinds.

Schools, which offer a wide variety of services that go well beyond addressing the academic needs of students, are taking important steps in supporting students so that they can learn.

Finally, educators are renewing their efforts to draw parents into the school community. Schools are encouraging many different forms of parental involvement, including visits to school, attendance at programs specially designed for parents, communication with teachers, helping students with career and college plans, becoming volunteers, helping to establish discipline or homework guidelines, and participating in school decision-making committees (Moles, 1993). When successful, schools reap many benefits from parental involvement. Most importantly, parental involvement in their children's education appears to translate into higher academic achievement (Keith & Keith, 1993; Barton & Coley, 1992; Henderson & Berla, 1994).

The bottom line is that schools cannot raise standards and academic achievement without also providing the support students need to perform at their highest possible level. And to provide that support, schools need to rely on new sources, many of which are off campus. The New American High Schools are, as a group, distinguished because they have recognized this reality and have tried many strategies to create those alliances. These include the following:

- creating conditions that foster stronger bonds between teachers and students, including smaller class sizes, block scheduling, schools-within-schools, and training teachers to be teacher-advisors,

- providing teachers with the training to meet the psychological and emotional needs of students, as well as how to know when expert help is needed,

- establishing centers at school where students can access coordinated services such as tutoring, counseling, or medical services, and staffing those centers with volunteers, student peers, or outside agency staff,

- providing incentives and encouragement to increase parental involvement through such activities as social gatherings, ESL classes, and mother-son groups, and

- creating mentoring programs that link youth with adults from the community.

Although each of the New American High Schools has innovative and successful practices in this area, two are selected to illustrate both the variety and effectiveness of creating alliances with community stakeholders to support students. These are Encina High School in Sacramento, California, and the Sussex Technical High School in southern Delaware.

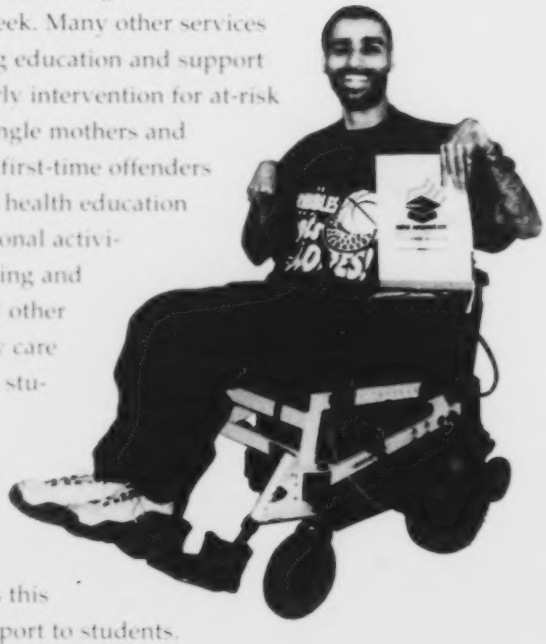
Encina High School

There are few students in any of the New American High Schools that live in a more socioeconomically depressed environment than those served by Encina High School. Located in one of the most economically depressed parts of Sacramento, where more than half the families are on welfare, educators at Encina High realized a long time ago that if they had any hope of raising the academic performance of the high school's low-performing students, they would need to do much more than improve the curriculum, raise graduation requirements, or build career academies. They would have to put systems in place to ensure that students had the stability, resources, and encouragement necessary to get to school every day, do their homework, and perform at their best.

One of the first steps reformers took when they launched their whole-school reform effort in the early 1990s was to help found the Alliance for Excellence, a network of six schools in West Sacramento (four elementary schools, one middle school, and Encina High School) and social service agencies. These schools are united by the mission to enhance education and learning through supporting staff development and well-coordinated social services to schoolchildren and their families. Funding comes from grants, local businesses, and community partners. For several years, the alliance has been the mainstay for the rich array of supports and services enjoyed by Encina students. Many of these services are delivered at Encina High's Resource Center, a unique place that gathers many services and resources under one roof.

These services include adult education classes, after-school tutoring, GED preparation classes, assistance to homeless students, and a coun-

seling program. Graduate students attending nearby California State University, Sacramento, who are fulfilling their internship requirements for counseling degrees, provide free counseling to Encina students and their families three evenings a week. Many other services are provided through the alliance, including education and support groups focusing on dropout prevention, early intervention for at-risk families, a mother-son support group for single mothers and their 10- to 14-year-old sons, a program for first-time offenders and family preservation, literacy programs, health education programs, and abundant social and recreational activities. There is even a local office for job training and job search assistance for Encina parents and other adults in the neighborhood, as well as a day care center for the babies and children of Encina students.



Erasing the walls between the school and the social service organizations on which so many of Encina families depend has been one of the most effective strategies this school has used to offer comprehensive support to students. Another has been an intense effort to involve parents more in the school community. Encina's location in a neighborhood with an extraordinarily high transience rate, where as many as 30 different languages are spoken by highly mobile ethnic and cultural minorities, has prompted educators to learn how to motivate students by connecting with their families.

In an effort to involve families, while simultaneously providing a badly needed service, the school offers Saturday classes in a range of subjects. Courses in Russian/Ukrainian languages, traditions, culture, and history are offered to the parents of the more than 100 Encina students who are Russian or Ukrainian. Up to 250 adults attend these classes on any given Saturday.

But, a sense of community is not built with classes and support groups alone. Strengthening ties through recreation and opportunities for informal socializing is just as important. To illustrate, one day a few years ago, a parent approached the principal to ask if the school gym could be opened to neighborhood youth to play basketball on Sundays as an alternative to hanging around the streets. The principal did not hesitate and promptly opened up the gym. Today, the gym has become a regular meeting place for dozens of families who gather every Sunday to play basketball, talk, and bring younger siblings to

play. Out of this tradition, the Encina Community Support Group was formed, with the goal of "building stronger relationships among parents, students, school staff, and community agencies to enhance students' learning experiences at Encina High School." The group organizes parent information meetings on a range of issues, surveys parents to assess concerns, disseminates information about the Family Resource Center, and organizes the annual open school week, when parents are encouraged to volunteer or just visit classrooms. This active group of parents even helped establish an in-school suspension program, which is designed to discipline and confine students within the safety of the school, without sending them home or out into the streets.

In recent years, Encina High has experienced steady improvement, a major accomplishment considering the continuing deterioration of the socioeconomic fabric of the surrounding neighborhoods. Fights among the school's nearly 1,000 students are now a rare event; suspensions have fallen; attendance is up; the completion rate rose last year by 15 percentage points; and teacher morale has improved. The Encina campus is well on its way to becoming a safe haven for young people, who turn to their teachers and other adults at school for support in their otherwise turbulent lives.

Sussex Technical High School

During the last seven years, Sussex Technical High School has evolved from a deteriorating area vocational school with declining enrollment, a reputation for attracting low-achieving students, and a reputation for turning out graduates performing at 6th-grade levels in mathematics, into a model technical high school attracting the attention of educators nationwide. Rather than close down the school when conditions were at their bleakest in the late 1980s, district and school administrators decided to turn things around at Sussex. A three-year research and planning effort was launched in 1988, beginning with the decision to join the Southern Regional Education Board's (SREB) High Schools That Work (HSTW) network.[24] The results of the base-

[24]The High Schools That Work network includes more than 600 schools, primarily in the southeastern and eastern United States. The network's goals are to boost the academic achievement of vocational students by raising academic standards and integrating academic and vocational education.

line HSTW Assessment[25] in 1988 confirmed what many already knew: Sussex Tech students had low academic and technical skills and were ill prepared for the increasingly technological and complex jobs in a restructured economy.

Led by a small and dedicated cadre of school administrators and a visionary superintendent, the district set out to transform Sussex Tech into a high-performing comprehensive high school where all students would succeed. Planners believed that their ability to effect positive change depended on their capacity to do two things: create learning experiences that were relevant and meaningful to students and support students with the services they needed to allow them to meet higher standards.

Educators at Sussex Tech recognized then and are even more confident now that raising the academic bar depends on giving students access to the services they need in order to permit them to focus on education. Unless their basic needs are met, including health, housing, financial resources, and mental health needs, students cannot learn, no matter how thoughtful the curriculum, how dedicated the teachers. During recent years, an impressive array of services has been put into place and made available to all Sussex students. The following describes some that are key.

Sussex teachers routinely go beyond the call of duty and work long hours, demonstrating their concern and support for the students. Teachers make it clear that they are available any time to help students. Students eagerly describe to visitors the dedication and enthusiasm of their teachers at Sussex and how much they appreciate their efforts. They talk about how the support and encouragement they receive from their teachers is crucial in keeping them motivated. Also, many students report that meeting their technical teachers daily and in small settings leads to strong bonds and that they rely on their teachers for guidance in both career-related and personal matters.

"Students here are surrounded by people who care," is how one parent described the support her daughter receives from the Sussex Tech faculty.

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[25]The HSTW Assessment is a modified version of the National Assessment of Educational Progress (NAEP). The HSTW network schools assess the performance of a portion of their 12th-grade vocational students in reading, mathematics, and science every two years.

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Plenty of after-school tutoring that is designed for routine use by all students is essential for ensuring that all students succeed in a school that is raising standards and expectations.

Sussex Tech offers a comprehensive after-school tutoring program, four days a week for several hours a day. Students receive help from faculty in all four core academic areas, as well as in Spanish, library skills, research skills, business and computer technology, and keyboarding and computer skills. This is also the place where students prepare to take the SAT and PSAT.

Sussex has placed a high priority on assisting students with learning disabilities and low-achieving students. A two-teacher team works in the regular classroom to ensure that special needs students receive the support mandated by the students' Individual Education Plans (IEPs). Additionally, 75 of those students needing the most help are selected for Title I services.

Sussex educators recognize that 9th grade can be a difficult transition year for students and that many students begin to lose their way at this point in their education. Sussex Tech's Techademics skills class is a remediation and instruction program designed to ease the transition for all 9th graders. A crucial component of the program is the "exploratories," in which students familiarize themselves with six vocational programs before selecting a career cluster.

In 1996, Sussex Tech added an additional support component to its student services program. A Student Assistance Team meets monthly to examine referrals from teachers who identify students having emotional, behavioral, and/or academic problems. The Team, which includes an assistant principal, the special education coordinator, the Title I project coordinator, a school psychologist, all counselors, a social worker, a nurse, and the school youth officer, tries to intervene early when students are struggling, bringing into play all the resources they can to help students stay on track.

Sussex Tech places considerable emphasis on its high-quality counseling program. Counselors are assigned to career clusters so that they get to know a smaller group of students better, and they work collaboratively with both teachers and an assistant principal to address each student's needs. Counselors are responsible for the same cohort of students for all four years, which ensures a high level of continuity in the student-counselor relationship. They provide or coordinate a range of services to students, including helping them decide on a technical area; conducting assessments of academic skills and aptitudes; assisting

students in developing their four-year plans (indicating courses and course sequences, and how these fit into students' goals); and monitoring progress toward graduation. Guidance counselors also manage each student's career portfolio, which includes all report cards, teacher evaluations, assessments, and awards.

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If teachers are expected to become strong sources of support for students, they need specialized training, as well as additional time and resources, to be successful.

Sussex Tech's guidance counselors point out that they receive strong support from the administration for their activities. During the school day, their work is focused on meeting with and counseling students, while paperwork and other administrative responsibilities, such as bus duty, are kept to a minimum, left for after school, or are assigned to assistant principals. "The administration allows us to counsel students" is how one counselor described his responsibilities. An important component of the guidance counselors' ability to provide support to students is the high degree of collaboration and teamwork among counselors, administrators, and teachers, who are all eager to wear different hats and share responsibilities. Comments from students such as "[t]he guidance counselors are what separates this school from the others," and "[t]he guidance counselors are like a second family to me," are the students' endorsements of their counselors and the counseling program.

In keeping with the philosophy that students cannot reach their full academic potential unless their basic needs are properly met, the school has run the wellness center for the last nine years. Staffed by a doctor who is there two days a week, a social worker, and a nurse practitioner, the center dispenses medicines, diagnoses and treats minor illnesses, conducts physical exams, and provides substance abuse counseling and referrals. The wellness center also works with the YMCA Resource Center of Delaware to provide conflict resolution workshops and classes in community-building, problem-solving, and communication skills. Currently, 98 percent of all Sussex Tech students are enrolled in this acclaimed program. Finally, Sussex Tech's daycare services to teenage mothers attending school is run and staffed by Cerebral Palsy of Delaware.

In a few short years, Sussex Tech has been transformed from a "dumping ground" for low-performing students into a vibrant, nationally recognized school. Between 500 and 600 8th-grade students apply every year for the school's 300 openings. In addition, students' scores on the HSTW Assessment and the SAT have risen significantly at Sussex Tech. While the emphasis on high academic standards and other reforms

could be credited for these impressive gains, Sussex educators are convinced that it is the wide, strong net of support services placed under each and every student that lies at the root of these achievements.

Conclusions and Lessons Learned

Sussex Tech and Encina High, on opposite ends of the country, incorporated the lesson that without support for students, especially those from disadvantaged homes, even substantial reform efforts will not change these students' performance or how prepared they are for careers. Each of these schools has reaped the benefits of reaching out to the community, as well as within the school, to capture the resources needed to provide a safety net for their students. Lessons learned from this experience include the following:

★ If teachers are expected to become strong sources of support for students, they need the specialized training, as well as additional time and resources, to apply these skills successfully.

★ Bringing community resources to the school, rather than sending students out into the community to access services, is a particularly effective strategy to ensure that all students have access to the services they need.

★ Schools that offer a wide variety of services that go well beyond the academic needs of students—mental health counseling, substance abuse programs, teen parenting classes and on-campus childcare, employment services for parents, and peer support programs—are taking important steps in supporting students so that they can learn.

★ Turning the school into a caring community where the social and emotional needs of students and their families can be met works particularly well for schools in disadvantaged neighborhoods.

★ Plenty of after-school tutoring that is designed for routine use by all students is essential for ensuring that all students succeed in a school that is raising standards and expectations.

★ Employers are often willing and even eager to help their local schools. Working with employers to create work experiences for high school students that are carefully linked to classroom instruction is one of the best ways schools can involve employers.

★ All of the New American High Schools who are partnering with employers, particularly in operating career academies, have to balance their need to be autonomous institutions with the advantages that these partnerships bring. Usually schools stop short of inviting employers to influence curriculum directly.

APPENDIX A
THE 12 NEW AMERICAN HIGH SCHOOL STRATEGIES

1. All the core activities of the school concentrate on student learning and achievement.

2. All students are expected to master the same rigorous academic material. High expectations are established for student achievement.

3. Staff development and planning emphasize student learning and achievement.

4. The curriculum is challenging, relevant, and covers material in depth.

5. Schools are using new forms of assessment.

6. Students get extra support from adults.

7. Students learn about careers and college opportunities through real-life experiences.

8. Schools create small, highly personalized, and safe learning environments.

9. Technology is integrated into the classroom to provide high-quality instruction, and students have opportunities to gain computer and other technical skills.

10. Periods of instruction are longer and more flexible.

11. Strong partnerships are forged with middle schools and colleges.

12. Schools form active alliances with parents, employers, community members, and policymakers to promote student learning and ensure accountability for results.

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APPENDIX B
THE NEW AMERICAN HIGH SCHOOLS

Adlai E. Stevenson High School
One Stevenson Drive
Lincolnshire, IL 60069
Dan Galloway, Principal
ph (847) 634-4000
fax (847) 634-0983
http://www5.district125.k12.il.us/

Berthoud High School
Thompson School District
950 Spartan Avenue
Berthoud, CO 80513
Len Sherman, Principal
ph (970) 613-7703
fax (970) 532-0140
http://www.thompson.k12.co.us/Schools/bhs.html

Chicago High School for Agricultural Sciences
3857 West 111th Street
Chicago, IL 60655
Barbara Valerious, Principal
ph (773) 535-2500
fax (773) 535-2507
http://www.gsh.org/schools/USA/IL/CHS1496/

Coronado High School
650 D Avenue
Coronado, CA 92118
Rick Schmitt, Principal
ph (619) 522-8907
fax (619) 437-0236
http://www.chs.coronado.k12.ca.us/

David Douglas High School
1001 SE 135th Street
Portland, OR 97233
John Harrington, Principal
ph (503) 252-2900
fax (503) 261-8399
http://www.ddouglas.k12.or.us./HS/ddhs.html

Encina High School
1400 Bell Street
Sacramento, CA 95825
Myrtle Berry, Principal
ph (916) 971-7538
fax (916) 971-7555
http://www.sanjuan.edu/schools/encina/

Fenway High School
174 Ipswich Street
Boston, MA 02215
Larry Myatt, Co-Director
ph (617) 635-9911
fax (617) 635-9204
http://fenway.boston.k12.ma.us/

Gateway Institute of Technology
5101 McRee Avenue
St. Louis, MO 63110
Susan Tieber, Principal
ph (314) 776-3300
fax (314) 776-8267
http://dtd1.slps.k12.mo.us/schools/high/gateway/gateway.htm

Greene JROTC Academy
503 Edison Street
Dayton, OH 45407
Cleaster Jackson, Principal
ph (937) 223-3058
fax (937) 824-7559
http://www.dps.k12.oh.us/schools/greene/greene.htm

High School of Economics & Finance
100 Trinity Place
New York, NY 10006
Patrick Burke, Principal
ph (212) 346-0711
fax (212) 346-0712
http://www.hsef.org/

Loveland High School
Thompson School District
920 W. 29th Street
Loveland, CO 80538
Doug Deason, Principal
ph (970) 613-5221
fax (970) 669-4768
http://www.thompson.k12.co.us/Schools/lhs.html

Marine Academy of Science and Technology
Building 305
Sandy Hook, NJ 07732
Paul Christopher, Principal
ph (732) 291-0995
fax (732) 291-9998
http://www.mast.mcvsd.k12.nj.us

Michael E. Debakey High School for Health Professions
3100 Shenandoah
Houston, TX 77021
Charlesetta Collins-Deason, Principal
ph (713) 741-2410
fax (713) 746-5211
http://riceinfo.rice.edu/armadillo/Schools/HSHP/

Newman Smith High School
2335 North Josey Lane
Carrollton, TX 75006
Lee Alvoid, Principal
ph (972) 389-3800
fax (972) 323-5866
http://www.cfbisd.edu/schools/smi/index.htm

Saunders Trades and Technical High School
183 Palmer Road
Yonkers, NY 10701
Bernard Pierorazio, Principal
ph (914) 376-8150
fax (914) 376-8154
http://www.yonkerspublicschools.org/shs.htm

Sussex Technical High School
Route 9, Box 351
Georgetown, DE 19947
Carole Williamson, Principal
ph (302) 856-0961
fax (302) 856-1760
http://www.sussexvt.k12.de.us/

Thompson Valley High School
Thompson School District
1669 Eagle Drive
Loveland, CO 80537
Ben Hix, Principal
ph (970) 613-7903
fax (970) 667-1628
http://www.thompson.k12.co.us/Schools/tvhs.html

Walhalla High School
151 Razorback Lane
Walhalla, SC 29691
John Hostetler, Principal
ph (864) 638-4582
fax (864) 638-4055
http://web.oconee.k12.sc.us/~whs/

William H. Turner Technical Arts High School
10151 NW 19th Avenue
Miami, FL 33147
Darrel Berteaux, Principal
ph (305) 691-8324
fax (305) 693-9463
http://www.dade.k12.fl.us/whtts/

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